

# portable

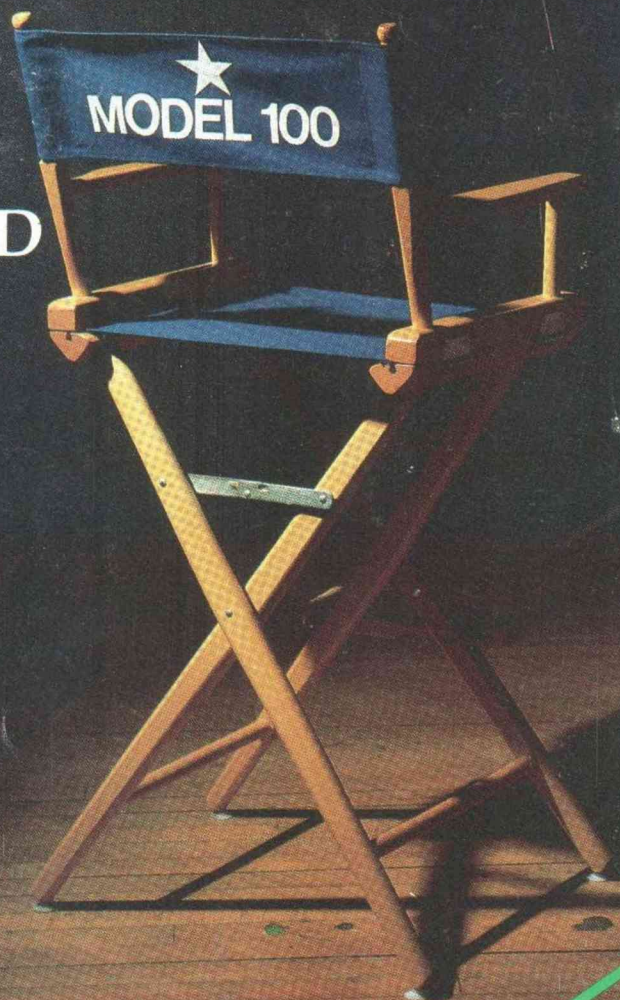
## 100/200/600

FOR USERS OF TANDY BRIEFCASE COMPUTERS

Portables Go  
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Talk to Your  
Desktop

Review:  
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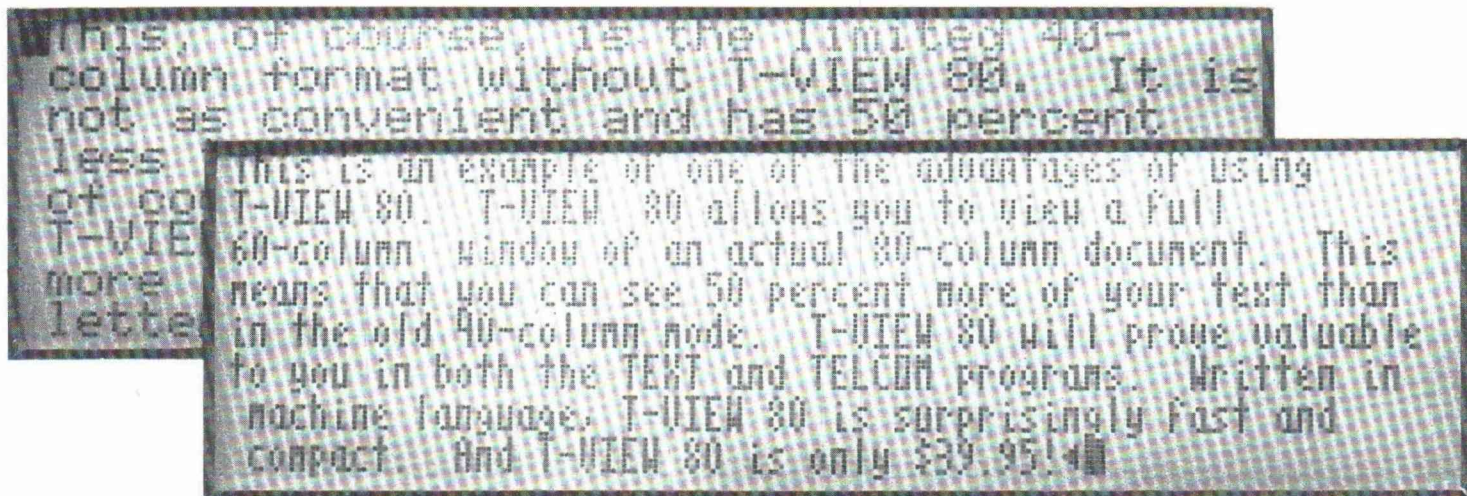
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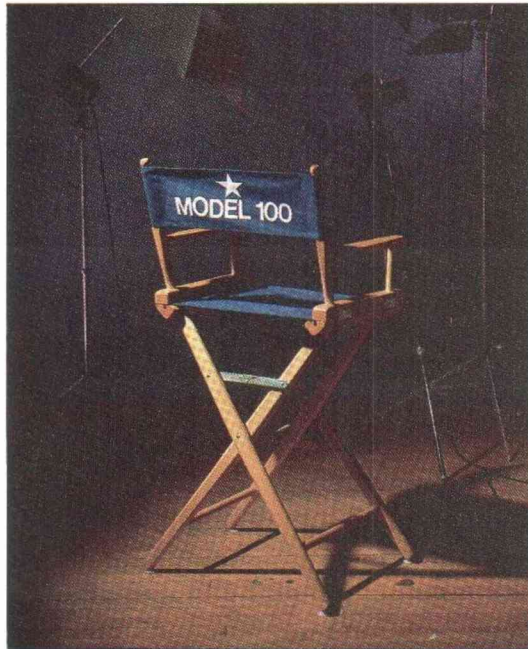


# portable

## 100/200/600

FEBRUARY 1986

VOLUME THREE, NUMBER SIX



### ON THE COVER

#### LIGHTS, ACTION ... MODEL 100! .....39

Portable computing goes Hollywood. Laptops find their way onto film sets and keep track of what will (and what won't) make the final cut.

*Cover Photo by Benjamin Magro*

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For most users, the laptop is not their only computer. Communicating with the resident desktop expands the capability of both.

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Socializing online. Bulletin boards not only provide a means of communication but an avenue for anonymous expression.

#### THE PORTABLE PHOTOGRAPHER .....25

Here are two timing programs for the amateur and professional. One assists in developing pictures, the other in taking them.

#### AROUND THE MODEM IN 80 DAYS .....32

The number of online services increases daily. Although different, they all offer a wealth of information to those willing to pick up a phone. Here's just a sampling of what's available.

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A quick and easy binary to decimal to hexadecimal converter program.

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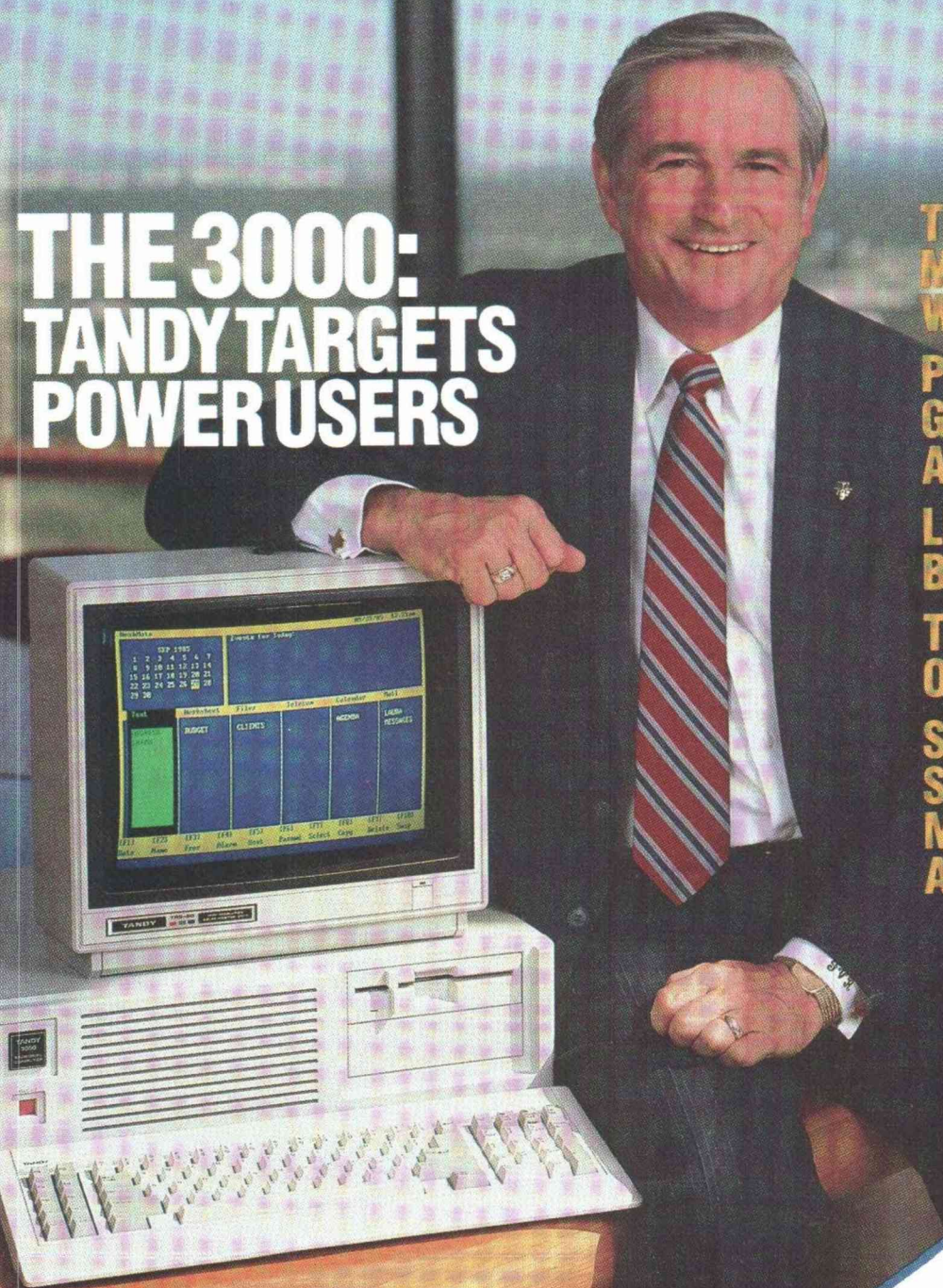
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# Keeping the Faith

**D**id you know that a market research firm predicted a \$5.8 billion market for portable computers in 1985? Well they were wrong. Quite wrong.

According to *Portable Computer Market: 1985*, an International Data Corp. report on the laptop market, the real number is more like \$375 million. They figure something in the neighborhood of 210,000 units were shipped during the year.

I don't know about you, but I'd say somebody made a mistake. A big mistake. Although some people may look at that earlier prediction and laugh, it has had serious consequences in the marketplace.

Many companies depend on market research firms to give accurate forecasts by which they can make their yearly projections. I can just imagine the scrambling that went on as established companies and entrepreneurs rushed to get a piece of the \$5.8 billion action. The assumption being that even if they reached a small percentage of the people buying portables, they could still do a reasonable business.

For example, let's say ABC Company has plans for developing a product that covers the entire portable product line. It works on Grid's \$4,000 laptop all the way down to the Model 100. Conservatively, they estimate that just five percent of the total market will buy their product. That's five percent of the people who spent \$5.8 billion just buying hardware.

Now, let's assume ABC figures the average sale price of a portable is \$2,500. Divided into our \$5.8 billion, that comes to 2.32 million units sold. If they sell to 5% of those customers, they'd move 116,000 units. If the price were \$39.95, that's a cool \$4.6 million in revenues. Not a bad business. The results would be good even if the projection was off by half.

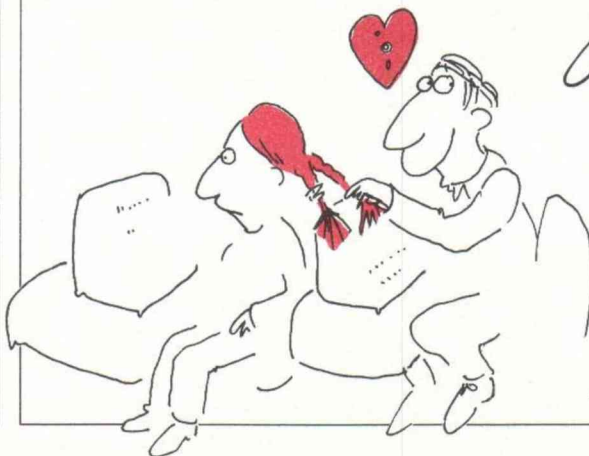
Unfortunately, it didn't work out that way.

The computer industry is not only suffering a slump but suffering from over-inflated market predictions. That \$5.8 billion projection wasn't the only one that was off base. InfoCorp, for example, once predicted a \$15 billion portable market by 1988. Another marketing research bigwig, Creative Strategies, estimated it should be \$17 billion by 1989. So approaching \$6 billion in 1985 was right in line.

Obviously, sales of portables will not even come close to those multi-billion dollar projections. That doesn't mean the market is dead. It's just not growing as big or as fast as the market research professionals thought. Third party vendors must keep that in mind in the coming year. Billion dollar projections are dreams. Million dollar results, in light of billion dollar projections, make strong wills. We just have to keep the faith.

*Park M. Morrison*

Park M. Morrison  
Senior Editor





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# Don't We Wish

I'm looking for a word processing program for my Model 100 that will also give me 16 lines and 80 characters. I've been told that somebody is offering this, but I can't seem to find it advertised. Can you help?

Jim Graber  
Evanston, IL

*There's no word processing program currently available for the Model 100 that displays 16 lines by 80 columns. Physically it's impossible due to the size of the 100's screen dots.*

*There are, however, some products that come close to what you're looking for. Lapstar, for example, is a Wordstar-like text processor that displays 10 lines by 60 columns. Contact CISS Corp, 3780 Manor House Drive, NE, Marietta, GA 30062, (404) 992-2200. There's also T-View 80, a display enhancement program from Traveling Software that increases the number of visible characters per line from 40 to 60. It can't give you any more lines, though.*

*Another suggestion is hardware specific. Axonix Corporation has introduced a product called Thinvid. It allows you to hook your Model 100 up to a television set for a full 25 line by 80 character display. It sells for \$249.95. Contact Axonix Corporation, 417 Wakara Way, Suite 130, Salt Lake City, UT 84108, (801) 582-9271.*

*Finally there's the Tandy 600 computer which has a 16 line by 80 column display and comes with a powerful built-in word processing program called Word. The 600 retails for \$1599. — Ed.*

## SO WHAT DOES IT DO?

What are the functions of the F5 (Echo) key in the Model 100's Telcom program? I had been using it to print files as they were being downloaded from CompuServe, but people at the local Radio Shack store advised that I shouldn't be doing that and warned that it might damage my 100. Also, why doesn't the F5 key have a label in Telcom since it has a function?

David W. Kraeuter  
Washington, PA

*The F5 key will not damage your 100. In fact, we advise its use in printing off large*

*documents while online — it's more efficient than saving files to RAM for later printing. Why isn't F5 shown on the label line? We don't know — but it should. Wouldn't it be nice if it was set up like F2 (download) and F3 (upload)? — Ed.*

## GIVES THEM HIGH MARKS

Congratulations to you and your staff for an excellent and informative magazine. I subscribe to *Portable 100/200* for information specific to my machine and to *Pico* for general information. I've gathered from both publications that there's sometimes dissatisfaction from people buying third-party goodies for their computers. Caveat emptor? What follows may be taken as endorsements for two companies with whom I've had positive dealings.

This past summer I purchased ROM2 from Polar Engineering and Consulting. The product allows users to write in 8085 assembler mnemonics and assemble this into pure machine code. The chip arrived soon after I sent my payment. It more than met my expectations. The documentation was adequate for anyone familiar with 8080 or 8085 code. Polar's personnel were knowledgeable, courteous, patient and helpful in both answering my questions and suggesting further references to expand my knowledge of the Model 100's secrets. I'm both completely satisfied with Polar's product and service.

The second company I've dealt with is Personal Integrated Computers (PIC). Although I haven't purchased their product yet, I've had a fair amount of correspondence with them both in writing and on the phone. They too were helpful in answering my numerous technical (as technical as I can get) questions. I'm definitely going to purchase the PIC Disk for my Model 100 as soon as finances allow.

I think publications such as yours should hear both the positive and negative feedback from your subscribers and that's why I've written this letter.

Larry R. Webbo  
Address unavailable

## NOT WHAT WAS INTENDED

I would like to apologize for my vitriolic letter (GIGO, November 1985) which appears you have taken very much to heart.

I was not intending to offend the well-meaning advertisers who in good faith bring their much needed products to the marketplace your pages provide. Nor did I mean to make a gesture which would hurt your magazine, which I see as a resource which far and away outweighs any other supporting businesses which have made the Model 100 a powerful and effective tool.

I meant to respond forcefully to a poorly considered editorial position, and an editorial which aggravated a sensitive issue. There's no doubt that you needed to address the issue raised by problems in product delivery. I recognize this as an industry-wide concern.

I think you addressed the issue well in the November issue with your statement that you expected your advertisers to be realistic in their expectations of performance. You backed this up with a commitment to investigate and pursue complaints made against vendors by sharing information about problems. This is an honorable position and greatly serves those who use your magazine.

Although I stand by my comments, I felt uncomfortable seeing my letter in print, and would see an important resource diminished if the hyperbole which I used to express my outrage at your editorial proved to be yet another offense to the responsible vendors who use your pages.

Richard Soltes  
Dallas, TX

*Apology accepted. Thanks for your comments. — Ed.*

## A WORD OF WARNING

Tandy Corp. is many things, however, one thing they are not is tolerant or charitable towards individuals who opt to purchase peripherals or up-



grades to their equipment which are either manufactured, sold or distributed by other companies.

I'm writing to warn other 100/200 owners who, like myself, have purchased memory expansion chips from non-Tandy sources of the hassles they'll likely encounter if their Model 100 or 200 needs service.

For example, recently my out-of-service Model 100 required service. It's a 24K machine with an 8K expansion chip from PG Designs. Foolishly I failed to remove the extra chip before taking it to Radio Shack. On calling to ask the estimated repair charge, I was told they had to "remove that Hitachi chip you installed because we thought it might be causing the problem." Only when I told them it had worked with that chip for nearly a year did they admit they too had found no problem with the chip. They wouldn't tell me whether they had removed any Tandy chips to see if they were defective.

When I opted not to have the unit repaired (it works fine except for BASIC), they refused to re-install the "Hitachi chip." Not that I couldn't install it myself but I felt as a matter of principle that they should return the unit to me in the condition they received it. After arguing the matter with the store manager, service manager and regional service manager, I had to accept my 100 with the expansion chip taped to the screen. Their excuse was, they couldn't legally install it because they didn't have anything to replace it with if it broke.

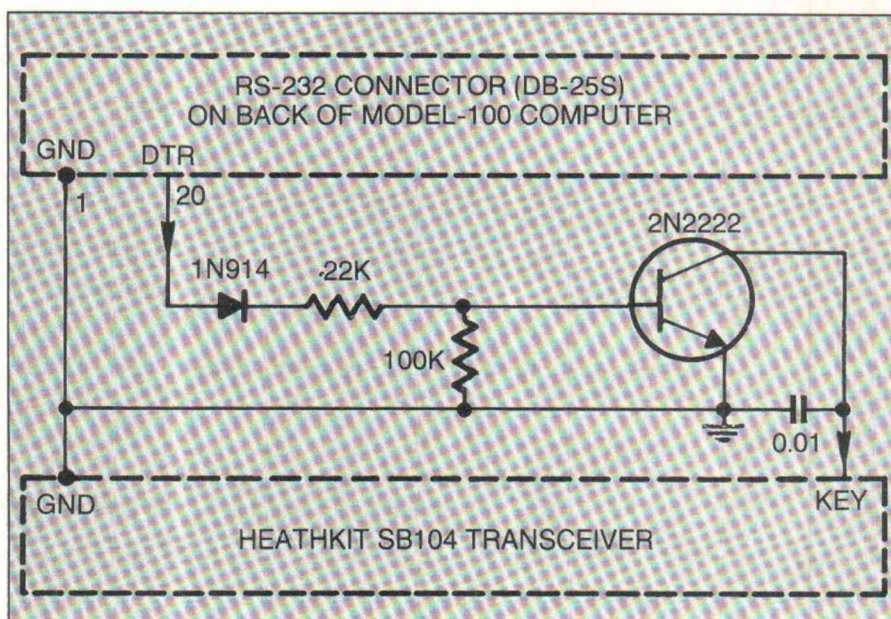
My urgent warning to all Model 100 and Tandy 200 owners is to remove any expansion or upgrades from your units if you intend to have them serviced by Radio Shack.

John F. Wellsman  
Landing, NJ

## READER RAMBLINGS

I thoroughly enjoy your magazine. The articles and ads are most helpful as I struggle to keep up with what's happening in the lap computer world.

Special thanks to you and Jim Irwin for his "Screen Graphics Not Just for LCDs" in the September 1985 issue. First of all, his article was so clear even I could understand it. Anyone who can write a program which I can make run successfully after only three tries has to be one of the world's best explainers. I've been desperate for such a program ever since I got my 200 last spring. It turns out beautiful graphs on my portable printer, making it particu-



The article "Hello Rangoon" (Portable 100, November, 1985) describes an interface between a Model 100 and a Heathkit SB104 transceiver for sending CW. This is the schematic of that interface. The transmitter is turned on by +5 volts at pin 20 (DTR) of the computer's RS-232 port.

larly useful for my high school math classes.

Dawes Potter  
White Plains, NY

## A QUESTION OF SIZE

Concerning the article entitled, "The 64K RAM Question: Who Does It Best?" in your September, 1985 issue, I've come across a discrepancy between Mr. Liswood's review and Mr. Lankton's, that being the size of the software program installed in PG Design's 64K RAM module. Mr. Liswood claims 4K but Mr. Lankton says 1.4K. Which is it?

John Lambirth  
Albuquerque, NM

PG Design's 64K RAM module includes a 1.4K program in each bank. Since there are three banks that comes out to a total of about 4.2K. Sorry about the confusion. — Ed.

## DIFFERENT APPROACH, SAME RESULT

I read with interest "One Cable Does All" in your October issue. Being chicken about getting into the innards of my favorite computer, I effected the same result on the cable itself. Here's how: Simply make up a cable from two equal lengths of four-conductor telephone wire. Place a DB-25 connector at

each end. Cover the connectors with plastic hoods. On the computer end of the cable make a cutout and install a double-pole double-throw switch in the hood itself. Wire the switch according to the schematic in Mr. Green's article. I did, it works great, and I didn't have to get into my 100 to do it.

W.R. Henry  
Daytona Beach, FL

Great tip. This may put a few of our readers at ease. Thanks. — Ed.

## UNKEY\$ CORRECTION

A Model 100 SIG member caught two errors in my LOADER.BA listing ("UNKEY\$: Selective Amnesia for Your Model 100 Keyboard," Portable 100/200, October, 1985). The first, in line 60 had SIZE instead of SIZ for the variable name. This should have no effect as the 100 only looks at the first two characters of a variable name.

The second glitch is more deadly. Line 210 should read POKE HIMEM+17,245 (not 24!). If the program is run without correcting that, UNKEY\$ will look at read-only memory (ROM) address 6395 for the disable flag. The address contains 2Bh, and any non-zero value tells UNKEY\$ to disable the BREAK et al.

Michael J. Nugent, Jr.  
Monroe, MI



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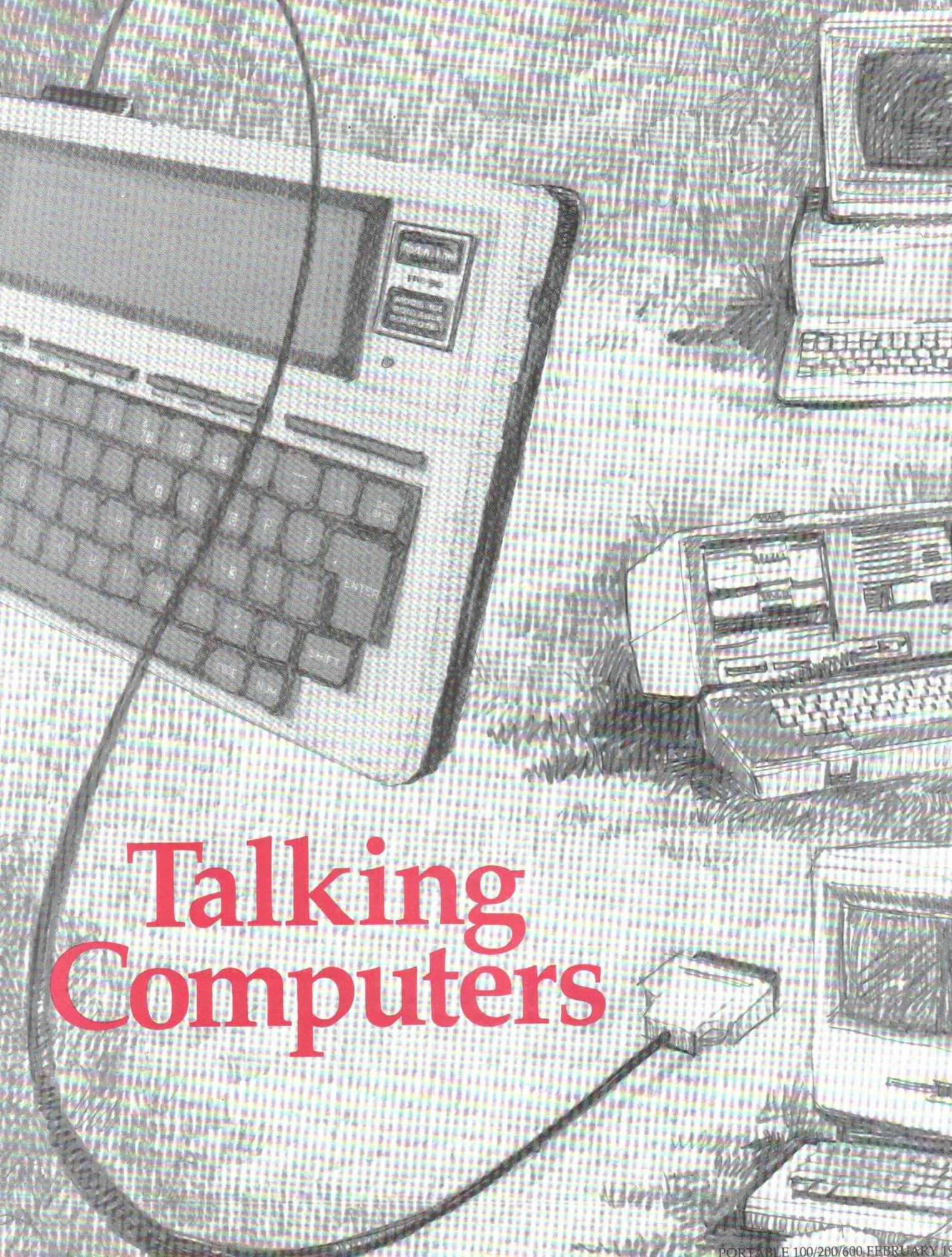
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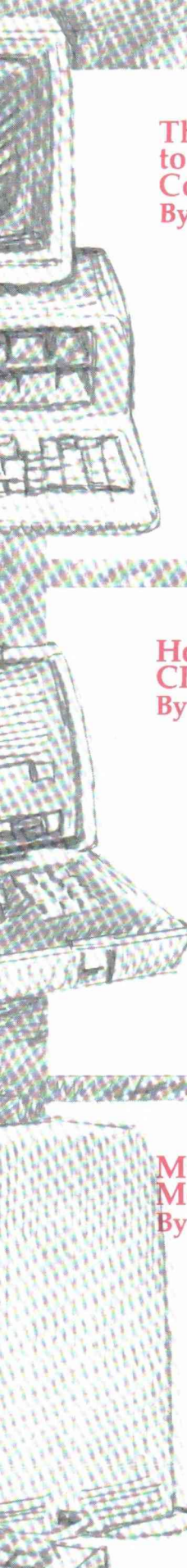
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Minneapolis, MN  
55440





# Talking Computers





## The Model 100 to MS-DOS Connection

By Paul Silagi

I've had an IBM PC for several years and just bought a Model 100 to use while traveling. I found it ideal in every respect except for its limited storage capacity. So it wasn't long before I decided to make use of my PC to store and manage my 100's growing library of programs.

When at home, I use the PC to download programs from CompuServe's SIG100. I can then transfer them to my 100 and keep a backup copy on diskette. There's no need to keep a program in random access memory (RAM). When not in use, it can be erased and re-transferred when necessary.

Obviously, I'm not limited to uploading or downloading just pro-

grams, but any data files. Often I'll write text on the 100, upload it to the PC and "fine tune" it with a word processor. The sky's the limit.

### LIKE FALLING OFF A LOG

Downloading to the Model 100 from an IBM PC or compatible is a simple procedure. If you follow the steps outlined below, you shouldn't have any problem. The beauty behind this procedure is it doesn't require a communications program and whether you're up- or downloading, it needs just one MS-DOS command.

The first step is to make the physical connection between the PC and the 100. I've chosen to do this directly

*Text continues on page 54*

## How to Talk CP/M

By Ken Haller

I'm a "power user" of WordStar. I use my CP/M-based computers, a Northstar Horizon at the office and Osborne Executive at home, almost exclusively for word processing.

I also have a Radio Shack Model 100. I use it for taking notes and writing initial drafts at job sites. Using the public domain MODEM7 (XMODEM) program I've perfected a way to upload files to either the Northstar or Osborne for rewriting and polishing with WordStar and vice versa. With this capability I now use the Model 100 to transport files between the office and home. In addition, I can use the disk drives on my CP/M computers for fast and convenient storage of Model 100 text and BASIC program listings.

The methods described here have two major advantages over those using the Model 100's TELCOM mode for file transfer. First, problems involving line feeds and carriage returns are eliminated. Second, BASIC program listings can be stored ready to run directly in compressed, tokenized form.

### TO BEGIN

We'll start with a step by step procedure for transferring files from a Model 100 to a CP/M computer. Note that all computer prompts are in bold type and what you should type is in *italic*.

1. Connect the two computers via their RS-232 (serial) ports using a null modem cable.

*Text continues on page 56*

## Me, Mac and the Model 100

By Richard L. Lewis

What to do when the beautiful relationship between you and your true love is shattered by the appearance of a third? What if that new inamorata brings power and wealth? Is it too much to ask that they love each other — or at least get along with each other — as well as they do with you?

No, this isn't the beginning of a new paperback romance novel. It's what happened when I added an Apple Macintosh XL (a.k.a. Apple Lisa) to my office where a Model 100 had served so faithfully.

I run a small newspaper and bought the Model 100 for keying stories. These were sent by modem to a computerized photo-typesetter in another part of the city. There they joined other sto-

ries that had been keyed by mainframe and the newspaper would be assembled.

As a new computer user, I wasn't sure I'd made a good investment. It seemed possible the \$1,000 (how times have changed) I'd wheedled out of my budget with many extravagant promises might not give a decent return.

Yet in no time I was getting a handle on BASIC. My proudest moment was when I wrote a program — with bits culled from many sources — that would automatically send my stories to the typesetter. If you've ever tried this you know it's not simple. Typesetting computers need codes at the start and end. Some ignore carriage returns

*Text continues on page 58*



# Go Anywhere Modem

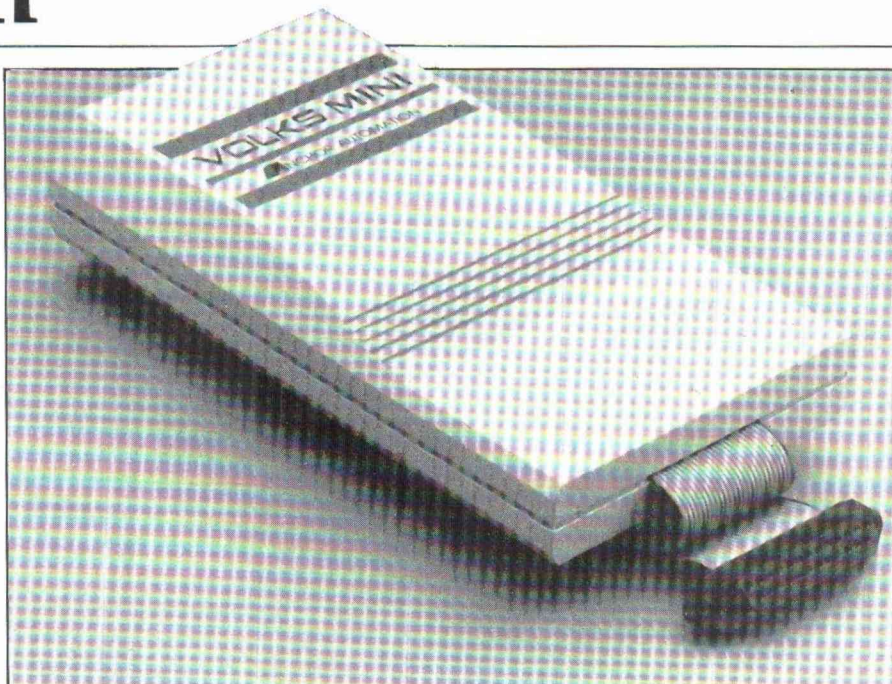
**P**ortable means not being tied to an AC outlet. It only makes sense then that peripherals for portable computers follow suit.

Anchor Automation has unveiled a new 300 to 1200 bits per second (bps) modem that doesn't require an AC outlet, power supply or additional cables. The Volks Mini plugs into the back of a terminal or computer through the RS-232 interface. The telephone connection is made via standard modular jack (RJ-11). The modem is powered by the telephone line.

Unless in originate or answer mode, the modem is inactive and doesn't interfere with normal telephone use.

The Volks Mini's suggested retail price is \$199, including a two-year, end-user warranty. Contact Anchor Automation, 6913 Valjean Avenue, Van Nuys, CA 91406, (818) 997-7758.

*Circle No. 87*



## The Power of Protection

**F**or those of you who frequently use your portable with an AC adapter or modem, file loss or damage due to extended range or modem spikes and static discharge is a constant threat. So a computer protection device that can travel with your portable is something to consider.

Introducing the Modem/Power/Static Pac from Electronic Specialists. It's a compact, all-in-one computer



protection package. It combines AC power filtering, extended range spike suppression, modem RF filtering, modem spike suppression and a static discharge plate.

Power is provided by a conventional three prong outlet and a CEE-22 universal portable computer power connector. A six-foot power cord is provided. Modem connection is through standard RJ-11 connectors. Static discharge is integrally designed into the Modem/Power/Static Pac.

The Modem/Power/Static Pac is available from stock for \$199.95. Contact Electronic Specialists, 171 South Main Street, Natick, MA 01760, (800) 225-4876.

*Circle No. 88*

## Prompt Action

**A**re you involved in repetitive information gathering? You know, the kind that requires using standard subject headings over and over again — in the same order. Things like questionnaires, logs, diaries, or ledgers.

If so, you're aware that the Model 100's text editor isn't ideal for this pur-

pose. You have to type headings repeatedly, along with their responses. Not only is it tedious and time-consuming but there's always a chance something will be left out.

Enter Prompttext from Life Sciences Editorial Software. This program displays prompts or headings that you have previously stored in a special file. It presents them one at a time, always in the same order, and waits for your response. The prompt and response are then stored in a separate file accessible in Text. Responses can be up to 200 characters long.

Prompttext is designed to interact closely with the Text mode. Entering Text from Prompttext takes one keystroke. Returning to the program requires three.

The number of prompts can range from one to dozens depending on memory limitations of your 100. Several different prompt files may be resident on your portable at one time.

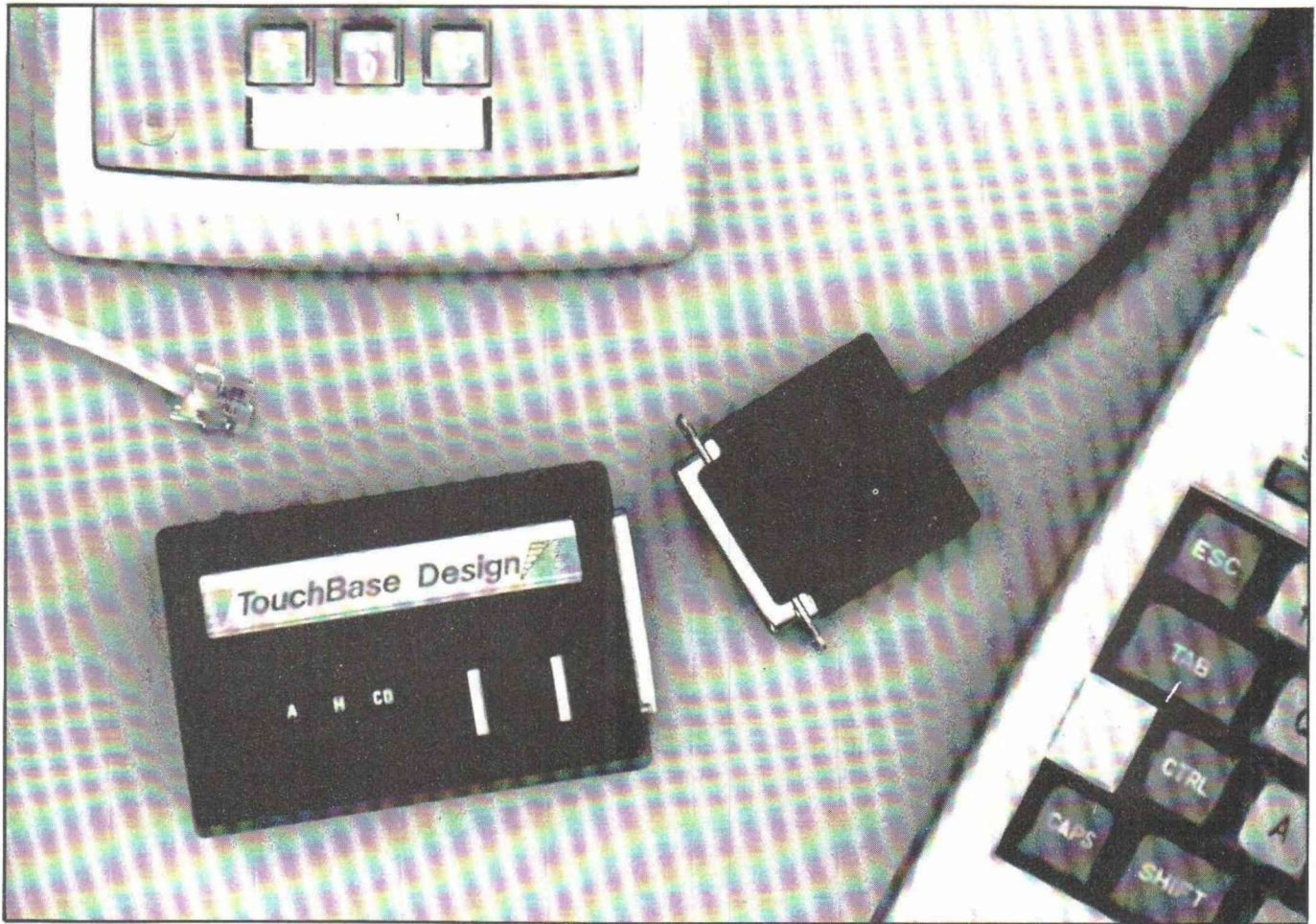
Prompttext is available for \$39.95 plus \$3.00 for handling and postage. Contact Life Sciences Editorial Software, 1236 River Bay Road, Annapolis, MD 21401, (301) 261-1370.

*Circle No. 89*

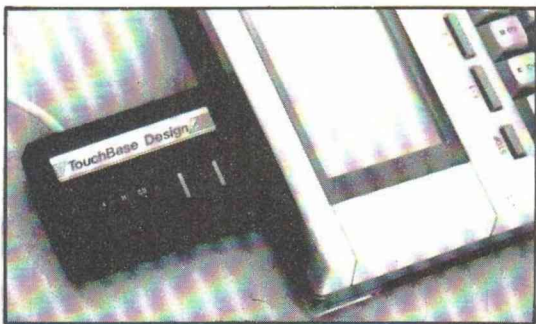


# 1200 Baud

*Why settle for less with your portable computer?*



## *The TouchBase TRAVELCOMM 1200 MODEM*



- Full featured
- Designed to travel
- Battery Power
- Auto 300/1200 Baud selection
- Weighs 6 oz.

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**TouchBase Design**

1447 So. Crest Dr., Los Angeles, Ca., 90035 (213-277-1208)



# USE YOUR DESKTOP COMPUTER AS A DISK DRIVE FOR YOUR M-100.

*New -  
IBM, MS-DOS  
version works  
over the phone!*

# Disk+

on Snap-In<sup>TM</sup> ROM

NOW  
AVAILABLE  
ON  
M-200

## Try *Disk+* for 30 days. If you aren't as excited as we are, return it for a full refund.

When we designed *Disk+* we did it out of necessity. We wanted a way that we could just connect a Model 100 to our desktop computer with a cable and save files onto the desktop's disk drive. We wanted it to be so simple to use it would be self-explanatory.

Picture this. *Disk+* comes to you on a Snap-in ROM and a diskette for your desktop. You take a quarter and open the little compartment on the back of your Model 100. Then you just press the ROM into the socket. *Disk+* appears on your main menu just like a built-in.

You connect your Model 100 to your other computer using an RS232 cable (available from PCSG for \$40).

You just place the *Disk+* diskette into the desktop's drive and turn on the computer. It powers up automatically and says "awaiting command" on your desktop's screen. Then you just put the widebar cursor on the Model 100 main menu on *Disk+* and press ENTER. You are shown your RAM files arranged just like the main menu.

To save a file to your other system's disk drive, you just move the widebar cursor to the file you want to save and press ENTER. It is saved instantly with no further action.

To look at the disk directory, you just press a function key on your Model 100. You see immediately the disk directory on your Model 100 screen, and it is arranged just like your Model 100's main menu.

To load a file from the diskette to your Model 100, you just move the widebar cursor to the file and press ENTER. The file is transferred to your Model 100's RAM instantly. You can press F8 and go back to the main menu, and the file you loaded from diskette is there, ready to use.

It is so nice to be able to keep your documents, programs (both BASIC and machine code) and *Lucid* spreadsheet files on the diskette, and bring them back when you need them. All files are ready to run or use with no changes or protocol by you.

**If you have access to a desktop computer and don't have *Disk+*, then evidently we have done a poor job telling you about it.**

All files and programs that you load or save, go over and come back exactly as they are supposed to be because of full error checking. This guaranteed integrity is really a comfort. *Disk+* is wonderful in so many other ways. For example, you can do a "save all" of all your RAM files with just a touch of a function key. That group of files is saved on the diskette under a single filename with a .SD (for subdirectory) extension. Any time you want, you can bring back all those files at once, or just one or two if you like, again with one-button ease.

*Disk+* takes up no RAM. That's zero bytes either for storing the program or for operating overhead.

What really excites most *Disk+* users is text file cross compatibility. Your Model 100's text files are usable on your desktop computer, and your desktop's text files become Model 100 text files.

This means you can write something on your Model 100, and with *Disk+* transfer it

instantly to your desktop and start using it right away on your bigger computer. Or the way we like to work is to type in a document on the desktop computer and then transfer it to our Model 100 with *Disk+*. Then we print out the document, beautifully formatted, using WRITE ROM.

*Disk+* works with just about every micro sold, from IBM PC and its clones, to all Radio Shack computers (yes, all), to Apple II, Kaypro, Epson and most CPM. Just ask us. More than likely, your computer is supported.

Incidentally, hundreds of Model 100 owners have gone to their Radio Shack stores and bought a color computer because it is so low priced, and with *Disk+* they have an inexpensive disk drive.

And if that weren't enough, how about this: *Disk+* also provides cross-compatibility between different computers like IBM, Apple or the Model 4 using the Model 100 as the intermediary device. Quite a feature!

The snap-in ROM is really great because you can use other ROMs like *Lucid* or WRITE ROM. They snap in and out as easily as an Atari game cartridge and you never lose your files in RAM.

Anyone who ever uses *Disk+* simply can't do without it. But so many times we have had new users call us and say, "Wow! I had no idea when I ordered it that *Disk+* would be so fantastic. I just couldn't believe that I could use my desktop computer's disk drive with my Model 100 just like it is another main menu."

That's why we sell *Disk+* on a thirty-day trial. If you aren't completely satisfied, return it within thirty days for a full refund. Priced at \$149.95 on Snap-in ROM. MasterCard, Visa or COD.

## 1-214-351-0564

## PORTABLE COMPUTER SUPPORT GROUP

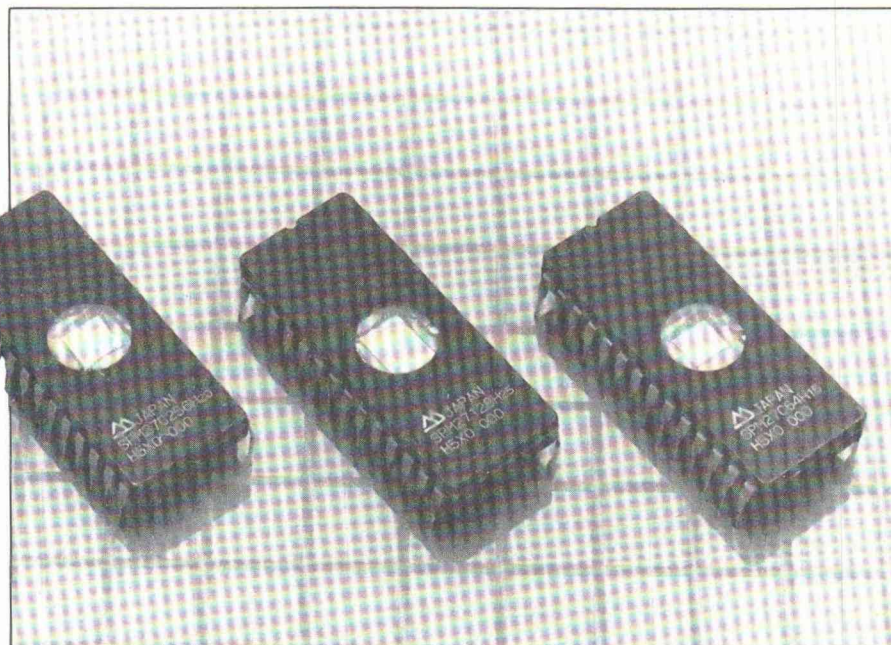
11035 Harry Hines Blvd., #207, Dallas, Texas 75229 • 1(214) 351-0564

PCSG provides hotline software support for the Model 100. Call us at 1-214-351-0564

© PCSG 1985

Circle 36 on Reader Service Card





## For Programming Entrepreneurs

There's another player in the electrically programmable read-only memory (EPROM) market. S-MOS Systems has introduced three new EPROMs ranging in density from 64K to 256K.

These new EPROMs combine access times of less than 200 nanoseconds (ns) with very low power consumption. The 256K device draws less than 30 milliamps of operating supply current and less than 20 microamps of standby supply current while offering a maximum access time of 200 ns.

The 256K EPROM, also available in a 250 ns version, is packaged in a 28-pin ceramic casing with a transparent lid that allows memory contents to be erased with ultraviolet light. Price per part for the 200 and 250 nanosecond versions in 100-piece quantity is \$11.62 and \$10.87 respectively.

The 64K EPROM is a CMOS device with 150 and 200 ns versions. It's packaged the same way as the 256K product. The 100-piece book price is \$4.27 for the 150 ns part and \$3.67 for the 200 ns part in the same quantity.

The 128K EPROM, unlike the other CMOS parts, is a n-channel semiconductor device packaged in 28 pin cerdip with a transparent lid. It comes in two versions — 250 and 300 ns. Individually they sell for \$4.27 and \$4.12

respectively in quantities of 100.

Contact S-MOS Systems, 50 W. Brokaw Road Bldg. 7, San Jose, CA 95110, (408) 993-1212.

Circle No. 90

## Don't Stuff It, Compress It

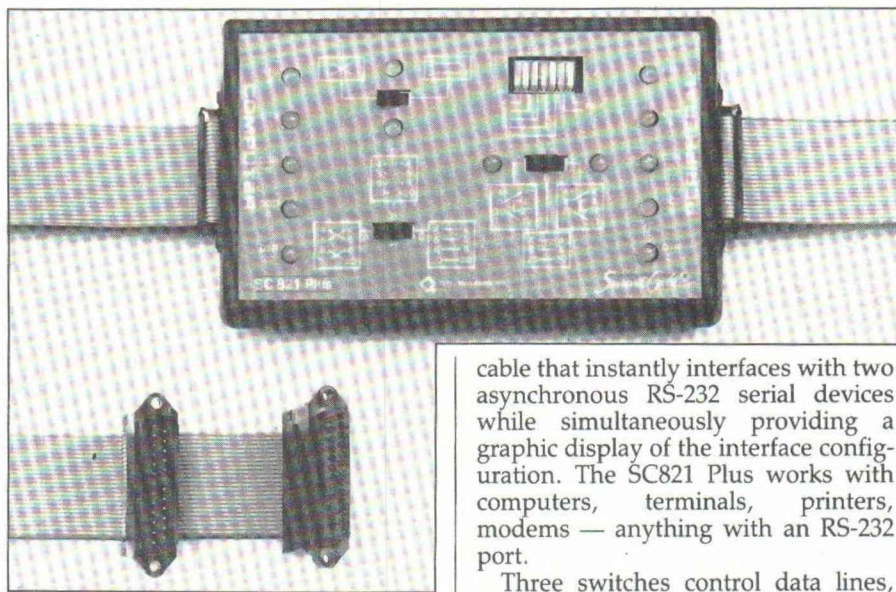
Hardware add-ons have traditionally been the method by which to overcome your portable's memory limitations. Now comes a software solution.

Lap Coder is a text compression program that translates text files into tightly packed code, thereby freeing memory space. It can then expand that code back into normal text when you want to use the file.

Files can be compressed by as much as 33 percent. Tape save and load times can be reduced by one-third and the chance of errors is decreased since fewer characters are involved. Similarly modem transmission time and errors are reduced.

Lap Coder is available for the Model 100, Tandy 200 and NEC 8201. Price is \$27.95 for a cassette and manual. Contact Mu-Psi Computer Consulting, 1010 Turquoise St. Suite 250, San Diego, CA 92109, (619) 459-5579.

Circle No. 91



## Know-It-All Cable

Frustrated over trying to connect alien modems, printers or other serial devices to your computer? Tired of battling with complex schematics trying to figure out a correct interface?

IQ Technologies has announced the Smart Cable SC821 Plus, an intelligent

cable that instantly interfaces with two asynchronous RS-232 serial devices while simultaneously providing a graphic display of the interface configuration. The SC821 Plus works with computers, terminals, printers, modems — anything with an RS-232 port.

Three switches control data lines, configure control lines and set handshaking protocol. For non-standard applications, an additional seven-position dip switch allows you to provide pull-up voltages to the major control or handshake lines.

The suggested retail price of the SC821 Plus is \$199.95. Contact IQ Technologies, 11811 N.E. First St. Suite 308, Bellevue, WA 98005, (206) 451-0232.

Circle No. 92



# My Secret Life on the Boards

By J.D. Hildebrand

I learned everything I know about gerbil ranching from a computer enthusiast I know only as Sysmoose.

I've engaged in serious philosophical debates with good friends I've never met, people with names like Doctor Catalog, Sir Eric, Dragonfly, Lord Kalkin and Xeno Paradoxus.

I've corresponded for almost two years with a small group of people who live in or near Madison, Wisconsin

— where I've never been. I don't know their names, ages, genders, races or educational backgrounds. Most of them wouldn't recognize each other on the street — and I wouldn't recognize any of them. But we share citizenship in a community complete with taxation, law enforcement, class stratification and civil disobedience.

The community exists, if that's the right word, as a pattern of on and off

bits in a home-built computer — and in the network of wires, transformers and relays that allow computer users with modems to send messages over telephone lines.

I'm a citizen of the Bulletin Board of the Absurd, a private bulletin board service (BBS) that's just one of thousands across the U.S. That citizenship has changed the way I think about computers, modems, communication,

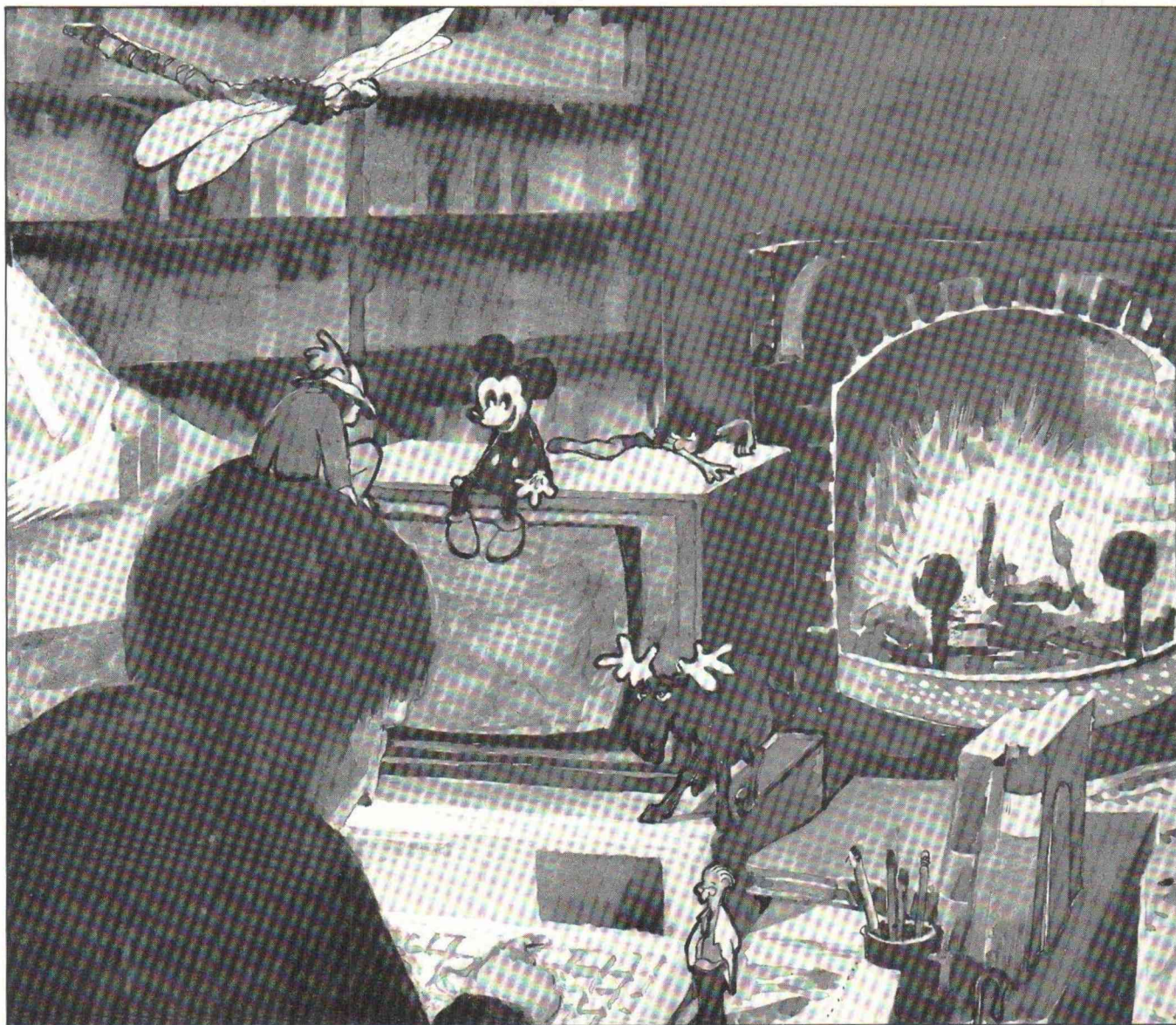
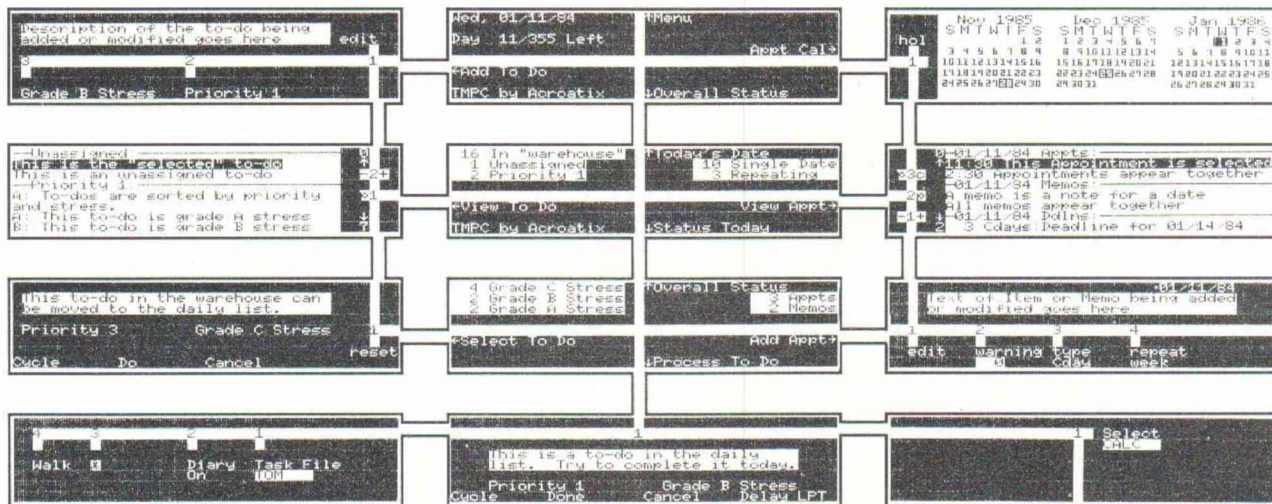


ILLUSTRATION BY DOUGLAS COFFIN



# TMPC

## A Plan for Efficiency



### For the TRS-80 Model 100

## More than a Calendar

TMPC helps you organize your day. It is more than a calendar program; it is a toolbox to help you keep your most urgent tasks at top priority.

## Efficiency is no Game

When you use TMPC, you enter the system of screens and corridors shown above and access features by moving through the rooms with the arrow keys. The screens may resemble an adventure game, but TMPC is a serious tool. The user interface will become second nature to you, like walking through the rooms in your home.

## Functions for Efficiency

Each screen has its own function. For example, one

screen includes a perpetual calendar, and another shows a "warehouse" of tasks to be done. In other screens you can set entries that repeat weekly, monthly, quarterly or yearly; request a warning of up to 999 days for any entry; sort your to-do list by stress level and priority; and more.

## Organization Philosophy

TMPC has more than just “features;” it has a *philosophy* of time management inspired by Stephanie Winston’s best seller, *The Organized Executive*. You won’t learn all there is to know about TMPC in five minutes, but after using it, you’ll feel more *organized*, not just more computerized.

## Spreading the Word

One user told us that he felt *guilty* to get so much functionality at so low a price. Find out for yourself. Order TMPC today.

TMPC by Ac'rō·ă'tix  
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COD or Courier shipment available at extra charge.



# We've done it again!!!

More super software for your Model 100, Tandy 200 & NEC PC8201A!

## MEN-U-TILITY

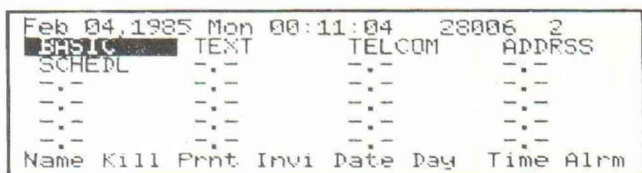
Men-u-tility is a powerful new utility for your Model 100. Once installed it is completely automatic and comes up when ever you would normally return to the main menu. As you move the cursor bar over the files, the length of each file is instantly displayed in the upper right corner. Men-u-tility adds 8 function keys to your main menu. You can kill files, rename files, make files invisible, set the day, date and time without ever leaving the menu.

Men-u-tility is also a print formatter. With F3, you can print any .DO file to your printer and you decide the right and left margins, top and bottom margins and page length! F8 sets an alarm that will go off no matter what mode you are in, BASIC, TEXT, TELCOM, etc.

If you have the Disk Video Interface (not required), the menu will appear on whatever screen you are using.

Men-u-tility only requires 1.8K of RAM and won't conflict with your other machine language programs. (100)

**\$24.95**

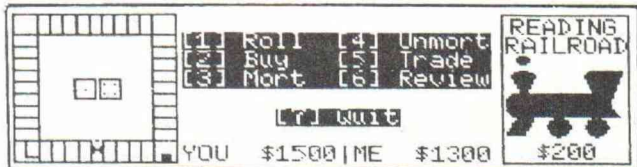


## LET'S PLAY MONOPOLY\*

It's you against the computer and the computer is a tough competitor. The computer makes all its own decisions. Super fast machine language graphics display the whole board at all times. You can tell at a glance who owns what property and the number of houses on each. It never takes more than 1 or 2 seconds for the computer to decide what to do. The computer is such a good player that you'll be lucky if you even win half of the time. (100,200,NEC)

\*Monopoly is a trademark of Parker Brothers.

**\$29.95**



## ASSEMBLER

Our assembler is the answer to your assembly language programming needs. It has all the features you expect in an assembler and more! It requires less than 3K of your valuable RAM space and is relocatable to any convenient place in memory. There are several useful macros already built in. You can output all or any portion of the assembled listing to your screen or printer. An extensive 56 page manual covers the use of the assembler, the complete 8085 instruction set, useful sample programs and LOTS of information on the ROM and reserved RAM areas. (100,200,NEC)

**\$32.95**

## Melody Maker

Melody Maker is a musical program generator. Simple cursor controls are used to select a note and position it on the staff making it easy to enter in sheet music. You can even use Melody Maker to add musical routines to your own programs. (100,200,NEC)

**\$19.95**

## BYTEFYTER

Now you can expand the memory capacity of your portable computer by reducing the size of the programs that you store in it. Bytefyter is a 100% machine language program that does just that. It is relocatable so that it won't conflict with any other machine language programs that you use now, or may use in the future.

Bytefyter works on your BASIC programs just as they are, IN PLACE. It strips unneeded spaces and remark lines. But that's not all! Bytefyter is smart! Bytefyter combines the lines of the BASIC program to whatever maximum length you specify. Each line of a BASIC program takes 5 bytes just for the line number and pointer information. By combining lines, Bytefyter saves a tremendous amount of space, space that could be used for another program or text file. Bytefyter actually checks the logic of your programs and doesn't combine lines that would cause the program to crash.

Bytefyter is amazingly fast. It will do its job on even the largest BASIC program in just seconds. You'll want to use Bytefyter on all your BASIC programs, whether you wrote them or bought them. (100,200,NEC)

**\$24.95**

## RENUMBER

Renumber is a machine language program that lets you renumber the lines of your BASIC programs IN PLACE! Renumber adjusts all references to line numbers throughout the program. It is completely relocatable so it won't conflict with your other machine language programs.

Renumber is FAST! It will renumber even the largest BASIC program in just seconds. You can renumber all or just part of a program. You decide the starting line number and the increment to use. It couldn't be any simpler. This is one utility that the serious BASIC programmer just can't afford to be without! (100,200)

**\$24.95**

## CBUG

CBUG is the ultimate debugging tool for your lap computer. It only requires 3K of your precious RAM space and is relocatable to any convenient place in memory. CBUG is not just fast, small and easy to use, it is POWERFUL!! With CBUG you can step through an assembly language program or the ROM while it displays the registers, the status of the flags, and associated memory locations. You can set breakpoints and execute your code to that point. You can step through call instructions with a single keystroke and return to the point after the call. CBUG does number base conversion, hex addition and subtraction, search and display, search and replace and block moves of memory. CBUG allows you to alter the values contained in the registers, display memory and load values into memory like a monitor program. (100,200,NEC)

**\$29.95**

## SORT

Our Sort utility lets you sort any TEXT file in place. You can sort the file by any field. Sort is 100% machine language and only requires .8K of RAM. (100,200,NEC)

**\$19.95**

## CUSTOM SOFTWARE

1308 WESTERN • WELLINGTON, KS 67152

316-326-6197



Please include \$1.00 per program for postage.

Be sure to specify Model 100, Tandy 200 or NEC PC-8201A.

For orders outside the U.S., include sufficient postage for airmail delivery. U.S. funds only.



friendship and society. I believe that the BBS represents an important new communications medium that will do much to change the texture of American life over the next several decades.

## IN THE BEGINNING

I had no awareness of online communities the first time I dialed The Absurd. I was evaluating a communications software package on a laptop computer for a magazine article. I picked the phone number at random from an issue of Plumb, a now-defunct newsletter that included access numbers for private bulletin boards all over the country.

I instructed the program to select 300 bits per second (bps) communications, seven data bits, one stop bit, even parity and full-duplex mode. Then I pressed the connect button.

My modem made dialing sounds, then I heard a high-pitched squeal. The squeal was answered by a second high-pitched sound, and text began scrolling across my screen: *Welcome to the Bulletin Board of the Absurd. Seven cps speed limit enforced 24 hours per day.* I had made contact with a BBS.

I typed in my name and a made-up password in response to prompts, and that was that. From then on I was free to read messages, reply to them or start new conversations. I was a member of The Absurd.

The BBS informed me that there were 121 messages in the database and that I hadn't yet read any. So I typed *R* for Read, and was prompted, *Read: 1 to 121, Write, ?, Abort, RETURN for 1.*

I tapped my Return key to read message number one.

msg 1  
To: WET WAX  
From: NEW ORDER  
Subject: New and improved Greetings, O Damp One—

The new order is a vastly improved formulation of the old order. The old order is still available on a request-only basis.

>New Order>

Read: 1 to 121, Write, ?, Abort, RETURN for 2.

msg 2  
To: ALL  
From: \* SYSMOOSE \*  
Subject: Gerbil lore

A co-worker was inspecting one of my gerbils. He called it a rat. I said it wasn't a rat, it was a gerbil. Rats have ugly bare tails. Gerbils have pretty furry tails with a little brush on the end. He examined

the gerbil closely and saw that it was indeed so. Then he looked up from the gerbil and said, "What you have here, Moose, is a winterized rat."

Sysmoose

Read: 1 to 121, Write, ?, Abort, RETURN for 3.

msg 3  
To: DRAGONFLY \*  
From: THERON WARE  
Subject: The pits. . .  
Delightful D'fly:  
The answer to your somewhat moldy

---

Each user  
has a quota  
of creative  
ideas to  
contribute.

---

question of the moral implications of eating avocados is really very simple.

Avocados and other fruits and vegetables DO have souls. In fact, all things — rocks, oceans, shrubs, even politicians — have souls. The only difference between an avocado soul and the soul of, say, Dr. <C>atalog is that the avocados actually WANT to be eaten.

Look at the life of an avocado. It starts out with a silly little flower thingy, fertilized by some passing bee or fly or other disgusting thing. Not much fun there. It's green and bumpy. And what sort of future does it have? It'll probably fall off the tree and rot — after all, only a very few make it to treehood.

Avocados THANK you for eating them, smushing them up. It's the one chance they have to do something good for someone and thereby get to avocado heaven.

Theron "This message brought to you by The Guacamole Achievers" Ware

Read: 1 to 121, Write, ?, Abort, RETURN for 4.

msg 4  
To: \* SYSMOOSE \*  
From: OLIVER CROMWELL  
Subject: Gerbils  
Sysmoose,

All of your gerbil messages have sent me scurrying to my reference books. It seems all of the gerbils in the U.S. are apparently descended from twenty-two

Japanese imports sent over in 1954.  
Just thought you'd like to know.  
The trivial—  
Oliver Cromwell

Read: 1 to 121, Write, ?, Abort, RETURN for 5.

I was immediately struck by the zany names adopted by most of the users, and by the off-the-wall messages they'd left. The Bulletin Board of the Absurd was well named.

Having verified that my software could receive messages, I felt obliged to test its text-sending capabilities. I pushed *W* for Write. I addressed my message to *ALL*, and tagged it *Howdy* in the "Subject" line.

One and all—

This is my first time here, so if I break any local rules please bear with me. I'm technical editor of Portable Computer magazine in San Francisco. Do any of you use portables?

J.D. Hildebrand

Typing my message, I discovered very quickly what the "seven cps speed limit" was all about. It was easy to type more quickly than the system could accept text. I presumed — correctly, as it turned out — that this was a peculiarity of the bulletin board's software, not a limitation of the software I was evaluating.

The BBS displayed my message to me, offered me an opportunity to edit it, then posted it. Your message is number 122, I was told. Now all I had to do was log on again in a day or two and read the replies to my message.

## BREAKING THE ICE

I gave The Absurd a three-day wait, just to make sure. Then I logged on again. Message base contains 108 messages, the board informed me. Checking for mail . . . No mail for you.

No mail? Could it be that none of The Absurd's members used portable computers? Had my message been improperly posted? Had I innocently broken some BBS custom and offended the other users?

I started searching the board's commands for a "Help" or "New user" section, and was intrigued by a command called "Chat." I pressed *C* to see what it would do.

\*\* CHAT \*\*

Paging the Operator. . .  
The Operator is here.  
Hi.



It seemed I was in direct communication with the BBS's system operator. "Hi," I typed. "Are you the sysop?"

*Yes. Are you really calling from San Francisco? How did you hear about The Absurd?*

*Yes I am. I got the number from Plumb.*

*I see. We don't get many out-of-state callers — the long-distance charges are too high.*

*I'm calling from my office, researching an article. How many users do you have?*

*The directory has about 120 names, but more than half just log on to read the messages, and never leave any. The active base is about 25-35 users.*

*Did I do something wrong? Why didn't I get any response to my message?*

*"Hi, I'm new here" messages addressed to "ALL" rarely get a response. Send a message or two with some ideas in them, and address 'em to other users. Respond to their messages — the more absurd, the better. Insults almost always get response (a high percentage of the messages here are of the creative insult category).*

*Thanks. I noticed that I could type faster than the BBS could accept text. Is that because we're limited to 300 bps?*

*No, it's because I wrote the software myself and 7 cps is as fast as BASIC will accept text and echo it back to your terminal. I'll CHAT with you later. Bye.*

**\*\* OUT OF CHAT MODE \*\***

I had completed my first real-time electronic conference.

I had also completed my software review. So any further long-distance calls to The Absurd would have to be on my own phone line, at my own expense.

At this point I was committed to getting noticed online, to getting a response. So that night I logged on from home and left a half-dozen messages that I felt would be sure to generate some controversy and response. My final opus was addressed to "Knuckleheads," and in it I took specific users and The Absurd in general to task for what I perceived as an overall lack of literacy. I noted many examples of poor spelling and grammar, and closed by suggesting that users who couldn't compose simple sentences

shouldn't bother replying.

## FORGING AN ELECTRONIC IDENTITY

The next night I hit the E-mail jackpot. I found 11 messages waiting for me, and many of the messages addressed to other users concerned my effrontery in attacking the BBS.

Xeno Paradoxus was particularly vicious in his counter-attack. He got a lot of mileage out of finding a typo in one of my messages, and asked if it disqualified me from BBS use under

## The Leviathan replied with a half-dozen scalding limericks.

my own elitist criteria. It was Xeno who first referred to San Francisco as Lotus Land, providing a key element of my evolving online persona. The Leviathan replied with a half-dozen scalding limericks that called my parenthood, intelligence and personal hygiene into question.

I had certainly succeeded in my goal of getting noticed.

After a couple weeks of barbed messages and equally sharp replies, I noticed a curious thing: The Absurd's users referred to me as "he" and "him" — always the masculine, though I'd never given a hint of my gender in any of my messages.

And so I left my first serious message, which was destined to be remembered on The Absurd as *The Genderless Manifesto*. I confronted the other users with their sexist assumptions, and with other evidence of chauvinism online. "J.D. could be 'Jack' or 'Jill,'" I pointed out. "On what basis do you assign me masculinity?"

I signed the message "J.D. the Genderless, Lotus Land, USA." And for the past two years, that's how I've signed every message.

The response to my manifesto was mixed. Some users rationalized their assumption with statistics: most computers are used by males, most BBS users are male and so on. Others defended the use of "he" as the generic third-person pronoun — a practice

which I, as an editor, could hardly fault.

But a small group of users, including Xeno Paradoxus and Dragonfly, responded insightfully and seriously. They admitted the truth of my charge, and sought to uncover more unthinking assumptions in evidence on the BBS. They sent me long, thoughtful messages about the nature of a bulletin board and its users, pointing out that in this electronic medium there lies the potential for communication free of prejudice.

"When you meet face-to-face you make assumptions based on appearance," Xeno wrote. "When you see whether a person is a man or a woman, how old he or she is, what race the person belongs to, how he or she is dressed, you adjust your thinking accordingly. Over the telephone you make similar adjustments based on the person's voice. But on a BBS you're free to respond to the person's ideas with ideas of your own. It's the most direct, honest, prejudice-free communications medium in history."

Dragonfly and a few other users had similar thoughts. Maybe Theron said it best:

To: J.D. HILDEBRAND  
From: THERON WARE  
Subject: BBSing

*The topic seems to have come up of the place of the BBS, and all telecommunications, in society. Here's what I think.*

*The BBS is, first and foremost, a medium for the expression of personal ideas with minimal personal responsibility. This is the reason for pseudonyms. All new users begin timid in a way, very secret, yet very opinionated and open in another way. You can talk about anything over the BBS if no one knows it's you. This is a good thing.*

*As the user grows and matures in his alter-ego, which is really closer to his true self in many ways than his real life (tm) persona, and realizes that the BBS society accepts him for what he is, he becomes less secretive, even to the point of complete openness. This leads to personal meetings and even friendships, which is great.*

*The impersonal nature of BBSs must not be ignored. (Impersonal meaning non-physical, not un-open.) Yes, this is strange, odd, even scary. How some people can completely lie and become someone else, other than the ones you know.*

*But they don't really. These alter-egos are really just parts of ourselves that we don't express publicly in real life (tm).*

*Certainly this anonymous medium will*



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And here is what is really amazing. You can copy or cut from one spreadsheet and paste into another spreadsheet or even a TEXT file.

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LUCID<sup>®</sup> will not only process values, but text input as well so that the facts other than numbers can be responded to. LUCID<sup>®</sup> has the ability for you to refer in a formula to cells containing words. This feature combines with the capacity of doing "if then" statements that work by doing table look-ups against even massive X/Y charts of text or numerical information. You can produce a program that responds to inputs with no programming knowledge whatsoever.

You can prepare a report section in your spreadsheet with instructions to your user for printout, and they can produce a personalized printout that responds to their input. All your formulas and tables that did the calculations and provided the facts are invisible to that user. LUCID<sup>®</sup> is useful for doctors for patient questionnaires, troubleshooting technicians, purchase clerks, people doing job quotes, stores for customer workups, insurance agents and anybody who needs to process specific facts and numbers to produce a report based on those responses.

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easier and faster to use."

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grow. As computing becomes cheaper and more efficient, and the communications network grows to encompass it, the "electronic group forum" will become more popular and more important.

The people of the BBS today do not hide away any more or less than the rest of the world. If anything, the BBS encourages social exchange and awareness.

Oh well, the above is a real potpourri of ideas, I hope someone takes the time to sort through it. . .

Theron "hurried, harried and haggard" Ware

## ONLINE ADDICTION

My first full month of membership on The Absurd yielded at least one tangible result: a long-distance telephone bill that approached \$300. This was a significant percentage of my take-home pittance as a bottom-of-the-totem pole editor. Accordingly, I began looking for a BBS nearer home.

As I soon found out, there's no shortage of bulletin boards in the San Francisco area. Each has its own focus. One is about programming in FortH. Another is an electronic swapping and shopping forum for computer equipment. I found a number of boards devoted to matchmaking. There was even a BBS about portable computers.

I found the single-focus boards boring after the rapid-fire idea exchanges I'd come to look forward to on The Absurd. One BBS, The Motherboard, was interesting, but it operated under a hierarchy. Only a select few members got access to the really juicy parts. This created resentment among the second-class users.

Homesick for The Absurd's egalitarian expanse, I tightened my belt and dialed Wisconsin again.

I discovered that after my two-week absence I'd lost touch with most of the message threads. The Absurd holds a maximum of 175 messages; the sysop deletes old messages each evening to make room for the next day's quota. I learned in CHAT mode that the board received about 30 messages each weekday, and as many as 75 per day on weekends. To get current, I had to read through the entire message base at one sitting. It was definitely time to get a WATS line.

It didn't take long for me to realize that I was a BBS junkie. Every night after work I rushed home and logged on to check my mail. It was hard to stay away from the keyboard on weekends — sometimes I logged on three or four times in a single day.

It seemed that the more often you

log on, the more opportunities you got to influence the course of a discussion by replying to messages. When Dr. Catalog left a message Tuesday afternoon, my best bet was to answer sometime Tuesday evening. Otherwise a half-dozen users would reply, steering the conversation in a direction that didn't interest me. The board's very nature encourages frequent participation. It's addictive.

I soon became one of the most active members of the BBS. I found that I could send private messages that were readable only by the sysop and the in-

---

**AKA**  
Wanderer:  
"My chief  
objection is a  
lack of visual  
stimuli."

---

tended recipient. In these messages some of the users shared personal information with me, details about where and how they lived. One user reported that she couldn't log on as often as she liked because she had to borrow a computer to do so; I sent her a modem-equipped computer that I'd outgrown.

During the next six months or so I slowly became aware that my presence on The Absurd amounted to citizenship in an electronic community. And unlike the other political entities that claimed me as a member, The Absurd inspired civic loyalties.

The community analogy breaks if you try to stretch it too far, but the similarities are real up to a point.

Most important is the BBS's self-regulating law enforcement system. Users whose messages add little meaning to the conversation at hand are ignored or ridiculed. Eventually they go away. They're banished, and their citizenship is revoked. In extreme cases, the operator may invalidate their passwords. This is more in the nature of a reprimand than true punishment — the user simply needs to call in with a new identity and password.

Full membership in The Absurd also involves taxation, sort of. Since it's an electronic community, the most valuable commodities are ideas. Creativity and ideas are the community's currency. Each user has a quota of cre-

ative ideas to contribute. Those who fail to do so, like those who merely leave trivial messages, are discouraged from full participation. They may even find themselves locked out of the BBS if the operator chooses to delete them from the membership role during monthly house-cleaning.

Citizens in democratic communities are afforded an opportunity to have a say in the rules that govern them. The same is true of The Absurd. In response to user suggestions, The Absurd's operator has established two sub-boards with their own message bases. The Story Board is a forum for interactive writing, in which each caller adds a new chapter to an online novel. Usually, the novel under development is about The Absurd's members. The third board, Techno-Absurdity, was originally conceived as a repository for fanciful computer hardware and software designs. It's evolved into a semi-private meeting place for a handful of users whose messages are of little interest to the majority of The Absurd's legions.

In most communities, activists comprise a minority. On The Absurd, only a minority leave messages with any frequency. Most users log on once a week or so, read the message base and log off. Many have never left messages; some only leave private messages to each other, and don't contribute to the board's public message base.

## HUMAN NEEDS

Late last year I notified The Absurd's legions that I would be absent for a week or two — I was entering the hospital to undergo some minor surgery. During my convalescence I received a get-well card from my online friends. My message was the excuse for a rare face-to-face meeting where they all signed the card; then someone found my address in a San Francisco phone book and mailed it off to me. This card meant more than all the others I received.

In February 1985 I moved across the country to Maine. (I immediately changed my online address from Lotus Land to Lobster Land, of course.) A new job required most of my time, and I became an infrequent visitor to The Absurd. But several members had my work address, and continued to write to me to urge me to log back on.

Once the dust cleared I settled back into my once-a-day habit. The Absurd hadn't changed much. Some of my fa-

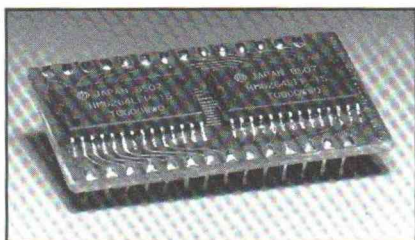
*Text continues on page 61*



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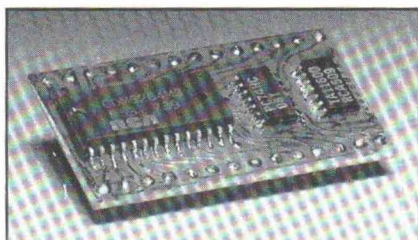
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# The Portable Photographer

*Here are two timing programs for the amateur and professional.  
One assists in developing pictures, the other in taking them.*

By Karl W. Randolph



PHOTOGRAPH BY BENJAMIN MAGRO

**A**lthough record keeping and other business related projects are the main reasons for owning a computer, it's also an excellent tool for the hobbyist. I'm a photographer. I not only just take pictures, I develop and print the film.

I bought a Model 100 long after I took up photography. But it wasn't long before I realized that with its built-in clock and beeper, I could use my portable to aid in the film development process.

I wrote a program especially designed to work with hand developing film in tanks. Essentially, it would be a faster and more efficient than using a Kodak data guide and a watch. The program works with any silver-based black and white process. It can be used for timing Ektachrome in Kodak's Hobby-pac E-6 as well.

A word of warning, this program uses a lot of memory to run. If your

*Text continues on page 30*

*Listing begins on page 26*



Listing 1: Program for timing film development

```

1000 '
1010 ' TMR.BA
1020 ' THIS IS THE MASTER PROGRAM THAT CALLS
      SUBROUTINES FOR TIMING
1030 '
1040 DEFINT K,L,T
1050 DIM B$(12), A$(12), B%(12), C$(12)
1060 INPUT "Do you have this process in data
      (Y/N)";N$
1070 IF N$ = "Y" OR N$ = "y" THEN GOSUB 1350 ELSE
      GOSUB 1220
1080 GOSUB 1460
1090 INPUT "Ready to start";Z$
1100 A$ = TIME$
1110 TIME$ ON
1120 FOR L = 1 TO K
1130 IF A$(L) = 0 AND B%(L) = 0 THEN 1140 ELSE 1150
1140 INPUT "Ready to continue";Z$
      :A$ = TIME$
      :GOTO 1190
1150 CLS
      :PRINT @ 14,A$
1160 I% = A$(L)
1170 J% = B%(L)
1180 GOSUB 1580
1190 NEXT L
1200 END
1210 '
1220 ' SETS UP DATA FOR A SINGLE RUN
1230 '
1240 INPUT "How many steps, include washes"; K
1250 INPUT "What is the normal temp";X
1260 PRINT "If step is untimed, enter 0, 0 for time"
1270 FOR L = 1 TO K
1280 INPUT "Name of step"; B$(L)
1290 INPUT "Minutes";A%(L)
1300 INPUT "Seconds";B%(L)
1310 INPUT "Agitation (# seconds/N)"; C$(L)
1320 NEXT L
1330 RETURN
1340 '
1350 ' READS DATA ON FILE
1360 '
1370 INPUT "What process do you want to run";NNS$
1380 READ NA$
1390 IF NA$ <> NNS$ THEN GOTO 1380
1400 READ K, X
1410 FOR L = 1 TO K
1420 READ B$(L), A%(L), B%(L), C$(L)
1430 NEXT L
1440 RETURN
1450 '
1460 ' THIS CHANGES TIME FOR TEMP
1470 '
1480 Y = A%(1) + B%(1)/60
1490 B = Y / 10^(-.019787016# * X)
1500 INPUT "What is the present temperature";T
1510 IF T = 0 THEN GOTO 1560
1520 Y = B * 10^(-.019787016# * T)
      :A%(1) = 0
1530 Y = Y - 1
      :A%(1) = A%(1) + 1
      :IF Y > 0 THEN GOTO 1530
1540 A%(1) = A%(1) - 1
      :Y = Y + 1
      :B%(1) = INT(Y * 60 + .5)
1550 CLS

      :PRINT @ 45, "Develop time will be (min/sec)"
      :PRINT @ 90, A%(1)
      :PRINT @ 110, B%(1)
1560 RETURN
1570 '
1580 ' THIS RUNS THE CLOCK FOR A STEP
1590 '
1600 F$ = A$
      :GOSUB 1920
      :PRINT @ 160, "END OF STEP",A$
1610 A$ = F$
      :J% = J% - 20
1620 IF J% < 0 THEN 1630 ELSE 1640
1630 J% = J% + 60
      :I% = I% - 1
1640 GOSUB 1920
1650 G$ = A$
1660 GOSUB 1790
1670 RR% = 0
1680 ON TIME$=A$ GOSUB 2150
1690 PRINT @ 94, TIME$
      :IF RR% = 0 GOTO 1690
1700 IF C$(L) = "N" THEN 1710 ELSE 1660
1710 J% = 5
      :I% = 0
      :GOSUB 1920
1720 ON TIME$=A$ GOSUB 2240
1730 PRINT @ 94, TIME$
      :IF RR% = 1 GOTO 1730
1740 J% = 15
      :GOSUB 1920
1750 ON TIME$=A$ GOSUB 2290
1760 PRINT @ 94, TIME$
      :IF RR% = 0 GOTO 1760
1770 RETURN
1780 '
1790 ' AGITATION BEEP ROUTINE
1800 '
1810 IF C$(L) = "N" THEN 1900 ELSE 1820
1820 I% = 0
      :J% = INT(VAL(C$(L)))
      :A$ = F$
      :GOSUB 1920
1830 HZ = VAL(LEFT$(G$, 2))
1840 H1% = VAL(LEFT$(A$, 2))
1850 IF HZ = 0 AND H1% > 0 THEN MID$(G$,1,2) = "24"
1860 IF G$ <= A$ THEN 1880 ELSE 1870
1870 F$ = A$
      :GOTO 1900
1880 IF LEFT$(G$, 2) = "24" THEN MID$(G$,1, 2) =
      "00"
1890 A$ = G$
      :C$(L) = "N"
1900 RETURN
1910 '
1920 ' RESETS TIME FOR INTERRUPT
1930 '
1940 X% = INT(VAL(LEFT$(A$, 2)))
1950 Y% = INT(VAL(MID$(A$,4,2)))
1960 Z% = INT(VAL(RIGHT$(A$,2)))
1970 Z% = Z% + J%
1980 IF Z% >= 60 THEN 1990 ELSE 2000
1990 Z% = Z% - 60
      :Y% = Y% + 1
2000 Z$ = STR$(Z%)
2010 IF Z% < 10 THEN Z$ = " " + Z$
      :MID$(Z$,2,1) = "0"

```



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*Database*—The portable disk drive stores your mailing list, inventory items, part #s and descriptions or any other data that you need to recall.

## 358K on a diskette

*Invoice (purchase order)*—At the touch of a button you can print out your sequentially numbered, professionally done invoices. This is truly professional invoicing capability.

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*Sort*—This excellent utility allows you rapid sorting of any records you have compiled. You can write the newly sorted list back in the same file on the diskette or to a new file.

*Telecom interface*—If you are a user that likes to access other computers or databases (for example CompuServe) by telephone then this powerful facility alone is worth the price of the disk drive. You can automatically download and upload information onto the diskette.

*Calendar*—Everyone who has seen this program has said, "This is the first calendar/

diary/scheduler on any computer anywhere that I can use. It is so functional."

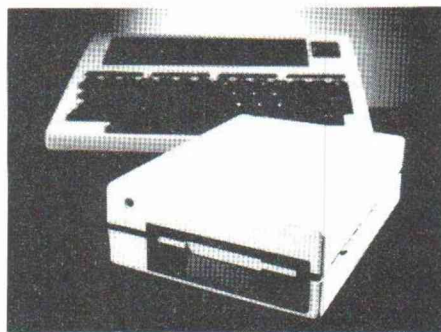
The calendar program is usable for two reasons, first it is designed correctly, and second you have the memory (358K) on the diskette to log and access a tremendous amount of notes over a long period of time.

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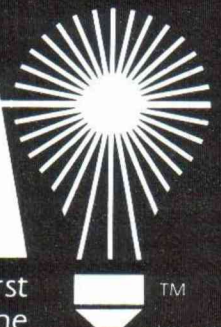


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```

2020 MIDS(AS,7,2) = MIDS(Z$,2,2)
2030 Y% = Y% + I%
2040 IF Y% >= 60 THEN 2050 ELSE 2100
2050 Y% = Y% - 60
      X% = X% + 1
2060 IF X% = 24 THEN X% = 0
2070 X$ = STR$(X%)
2080 IF X% < 10 THEN X$ = " " + X$
      MIDS(X$,2,1) = "0"
2090 MIDS(AS,1,2) = MIDS(X$,2,2)
2100 Y$ = STR$(Y%)
2110 IF Y% < 10 THEN Y$ = " " + Y$
      MIDS(Y$,2,1) = "0"
2120 MIDS(AS,4,2) = MIDS(Y$,2,2)
2130 RETURN
2140 '
2150 ' NEXT 3 - BEEPER ROUTINES
2160 '
2170 IF C$(L) = "N" THEN 2190 ELSE 2180
2180 BEEP
      GOTO 2220
2250 CLS

      PRINT @ 160, "Pour out chemicals"
2260 IF L < K THEN PRINT "Prepare "; BS(L + 1); "
      step."
2270 RR% = 0
2280 RETURN
2290 BEEP
      BEEP
      CLS
2300 IF L = K THEN PRINT @ 170,
      "Hang film to dry"
2310 RR% = 1
2320 RETURN
2190 BEEP
      BEEP
2200 CLS
      PRINT @ 160, "Pour out chemicals in 5 seconds"
2210 IF L < K THEN PRINT @ 200, "Prepare for "; BS(L
      + 1); " step
2220 RR% = 1
2230 RETURN
2240 BEEP
      BEEP

```

Listing 2: Reciprocity failure program.

```

100 '
110 ' RCPFR.BA
120 '
130 CLS
      PRINT @ 85, "What is the metered time?"
140 INPUT X
150 Y = INT(2.083333333# * (X ^ 1.380211242#) + .5)
      Z = 0
      ZZ = 0
160 IF Y >= 60 THEN 170 ELSE 180
170 Y = Y - 60
      Z = Z + 1
      GOTO 160
180 IF Z = 0 THEN 190 ELSE 210
190 CLS
      PRINT @ 45, "Exposure time is"; Y; "seconds."
200 GOTO 220
210 CLS
      PRINT @ 45, "Exposure time is"; Z; "min
      and"; Y; "sec"
220 PRINT @ 125, "Reduce development time
      by"; INT((LOG(X) / 2.302585093#) * 10 + 10.5); "%"
230 PRINT @ 205, "Do you want timing?"
      PRINT @ 245, "(Push <enter> when open shutter /
      N)"
240 INPUT AS
250 IF AS = "N" OR AS = "n" THEN 310
260 AS = TIMES$
      TIMES$ ON
      CLS
      PRINT @ 45, "Exposure started"
      PRINT @ 64, AS
270 GOSUB 330
      A = 0
      PRINT @ 125, "Exposure ends"
      PRINT @ 144, AS
      PRINT @ 205, "Present time"
280 ON TIMES$ = AS GOSUB 500
290 PRINT @ 224, TIMES$
      IF A = 0 THEN 290

300 TIMES OFF
310 END
320 '
330 ' This routine sets ending time
340 '
350 AS = VAL(RIGHT$(AS,2))
      AS = AS + Y
360 IF AS >= 60 THEN AS = AS - 60
      Z = Z + 1
      GOTO 360
370 ASS = STR$(AS)
      IF AS < 10 THEN MIDS(ASS,1,1) = "0"
      MIDS(AS,7,2) = ASS$
      GOTO 390
380 MIDS(AS,7,2) = MIDS(ASS,2,2)
390 IF Z = 0 THEN 490
400 AM = VAL(MIDS(AS,4,2))
      AM = AM + Z
410 IF AM >= 60 THEN AM = AM - 60
      ZZ = ZZ + 1
      GOTO 410
420 AMS = STR$(AM)
      IF AM < 10 THEN MIDS(AMS,1,1) = "0"
      MIDS(AS,4,2) = AMS$
      GOTO 440
430 MIDS(AS,4,2) = MIDS(AMS,2,2)
440 IF ZZ = 0 THEN 490
450 AH = VAL(LEFT$(AS,2))
      AH = AH + ZZ
460 IF AH >= 24 THEN AH = AH - 24
470 AHS = STR$(AH)
      IF AH < 10 THEN MIDS(AHS,1,1) = "0"
      MIDS(AS,1,2) = AHS$
      GOTO 490
480 MIDS(AS,1,2) = MIDS(AHS,2,2)
490 RETURN
500 BEEP
      A = 1
      PRINT @ 285, "Close shutter"
      RETURN

```



Model 100 has only an 8 kilobytes (K) of memory, it'll use up most of it. I'd suggest using larger machine.

### DUAL ROLES

There are two basic ways to use the program. One is for processes that you'll use just once and will then be erased from the computer's memory. The other is for processes used more frequently and which are stored in DATA files.

For the former, it's only necessary to

start the program running and follow directions as they come up on the screen. Enter the number of steps, a reference temperature, each step's time (in minutes and seconds) and the agitation schedule. Then just before running, type in the actual temperature of the solutions. The program figures out the time to develop the film for the actual temperature. When you begin developing, press Enter and the computer times the process. It'll let you know when time is up with beeps

and screen prompts.

For example, for one type of film, D-76 (a developing agent) is used for 8 minutes at 68 degrees with agitation every 30 seconds. Development is followed by an untimed wash, then fixed for five minutes. Next comes a two minute wash, two minutes in hypo clear, a ten minute wash, one minute in Fotoflo and then out to dry. Thus there are a total of seven steps besides drying.

When you start the program, the machine asks you if the process is stored in memory. In this case, you'd answer N for no. Next you're asked how many steps (7) and what is the reference temperature (68 degrees). Then a loop asks for times and agitation schedule for each step. The computer will then prompt you for the actual temperature of the developing solution. Let's say it's 75 degrees. Since development time varies with regard to temperature the program calculates the actual time your film should be in the developer. To start the clock ticking, press Enter when you start developing.

During processing, the computer runs almost automatically. Every 30 seconds (or 15 or 20, depending on which number you entered) it will beep to tell you when to agitate. At 20 seconds before the end of the step, the computer will give a double beep. A screen warning is given five seconds before a 15 second drain period. Five seconds later, again a double beep with a screen prompt telling you to drain the chemicals and prepare for the next step. Finally another double beep at the beginning of the new step.

During the untimed wash step, the computer waits for you to press Enter before restarting the timing sequence.

The rest of the steps follow pretty much the same as the first step, with or without agitation beeps depending on whether or not you entered a number or an "N" (it must uppercase). The final prompt tells you to hang up the film to dry.

### EASE OF REPETITION

If you should find that you use one process often, (e.g. you frequently develop Tri-X in D-76), you can store the data for such a process in a DATA file at the end of the program. The data file will start with a name. For example, D-76TX for Tri-X in D-76. It's followed by the rest of the data entered in the same order was done manually.

When running the program with a

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process stored in a data file, enter Y when asked if a process is in memory. Then enter the name you gave the process. The next prompt will ask for the present temperature. As in the example above, you'd enter 75 and then press Enter when you start developing.

As you can see, the program was designed to be easily used so you don't need to know programming to use it. It's especially helpful for non-programming photographers.

Kodak is very helpful to amateurs developing their own film. They include a chart listing recommended developers and times with each roll of film. This program allows you to time processes at temperatures far different than the recommended ones. However your best results will usually be within 10 degrees (plus or minus) of the recommended temperatures.

One note on E-6. The first developer is the touchy step and must be monitored carefully. The following steps all go to completion and stop. Thus the color developer can be timed for 9 minutes for all temperatures. The remaining steps seem to work fine for all temperatures at the listed times.

Good luck and good pictures. □

## Reciprocity Failure

Most films are designed for shutter speeds of about 1/10 to 1/1000 second. However, particularly with large format cameras, there are times when you want to use longer times because of dim lighting and/or the need to use a small aperture setting. In such situations films no longer act the way you'd expect them to — the difference is called reciprocity failure.

This short program works for most Kodak black and white films. It takes the time, a second or more, read from the lightmeter and corrects it to account for reciprocity failure. The program then gives you the option to let the computer time the exposure.

For those who use large format cameras and sheet film, the computer gives a figure telling how much to adjust development time for each exposure.

Once you start the program, follow

the instructions contained in it. It was designed so that a person does not need to know programming and only minimal training to run it.

For example, you want to take a picture at f-stop 22 but with the present lighting your meter reading is eight seconds. However reciprocity failure demands that you use 37 seconds. Enter the metered time and the display will show the corrected exposure time taking reciprocity failure into account.

The computer then asks if you want

it to time you. Open the camera's shutter at the same time that you press Enter. The computer display will show the time the exposure started, the current time and the time at the end of the exposure. Close the shutter when the computer beeps. You've got the correct exposure.

As you can see, running the program is designed to be simple so you concentrate on taking the picture, not worrying about technique. □

*Listing begins on page 29*

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# SO SIMPLE



# Around the Modem in 80 days

*The number of online services increases daily. Although different, they all provide a wealth of information for those willing to pick up a phone.*

By Alan L. Zeichick

They say the last frontiers are gone. The Wild West has been tamed, Shanghai is another New York and there's a McDonald's restaurant on the Champs Elysee. Nowhere different to go, no new places to explore.

Perhaps vacation travelling is ho-hum, but a new, uncharted world still exists, ripe for the electronic Indiana Jones.

It's the world of telecommunications and online services. Some of the places are fairly well known: CompuServe, ITT Dialcom. Other locations are more exotic, such as NewsNet and Dow Jones News/Retrieval. And some sites, like GEnie, are gearing up for their first batch of immigrants and sight-seers. But the world of dial-up computing is here to stay, and is becoming more exciting every day.

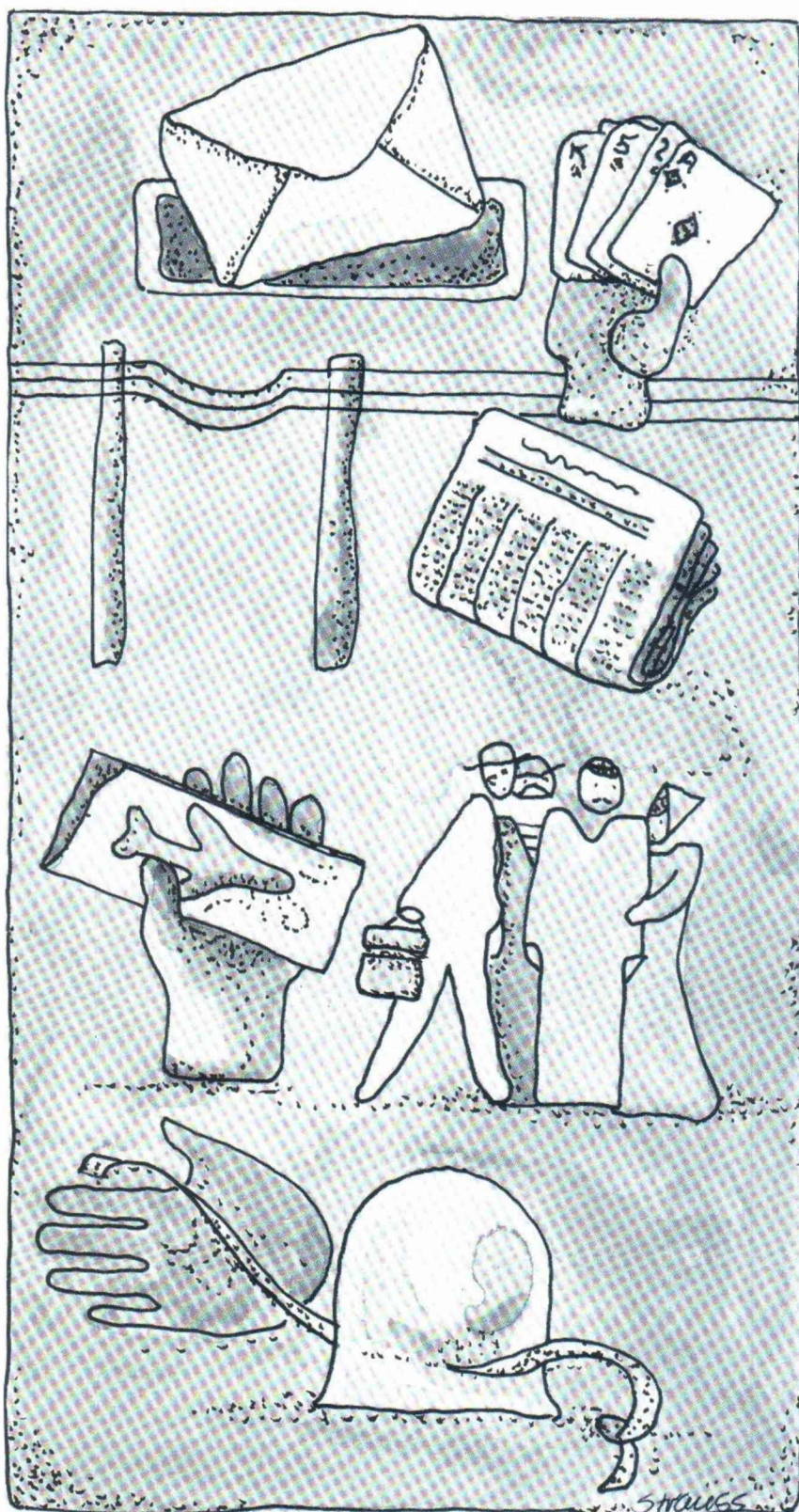
## SO MUCH TO SEE

What are the tourist attractions at the Port of Delphi or Downtown News-Net? Online services vary, perhaps even more than tourist resorts, in attractions and special cuisines.

The most exciting feature of online services, at least for most businesses, is electronic mail, often called *E-mail*. With E-mail services, a subscriber can send an electronic letter to another subscriber — and the recipient can read it within the hour. With E-mail,

business associates can eliminate the "telephone tag" syndrome, as well as sending complete sales orders, requests for more information, or simple, informal notes instantly.

Most E-mail services offer limited  
*Text continues on page 48*







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By CARL OPPEDAHL

For as long as they've been around, portables have been pushed to the limits of their capabilities. Programmers, engineers even non-technical types have called on machines like the Model 100 to do seemingly impossible tasks — at least for a machine of its limited size. Now there's another notch to cut in the portable's belt: computer-aided design. Once the prize of minicomputers, then micros, CAD is now possible on their much smaller cousins.

## THAT'S RIGHT, ON A PORTABLE

Stereo-CAD is a computer-assisted design program which lets you portray three-dimensional figures in two-dimensional drawings. The figures may be viewed from various perspectives, rotated, shifted and combined with other figures. One enjoyable feature is the ability to draw (using a plotter) side-by-side images which, when placed in a stereopticon viewer, give rise to convincing 3-D views. The program can perform calculations of analytic geometry — such things as the minimum distance between skew lines, the normal line between a point and the plane and so on.

The program, which is priced at \$250 (\$175 for schools), would be helpful to designers, draftsmen and others who repeatedly modify drawings of three-dimensional objects.

Stereo-CAD consists of a hundred-page manual and a cassette containing the program and data files for a number of sample drawings. The program is designed to display its pretty drawings on a plotter or on the computer

screen; both work well, though the Model 100's small screen limits the usefulness of the latter capability.

When you run Stereo-CAD, it asks you to enter the three-dimensional coordinates of *joints*, the corners of the structure to be displayed. *Members* (straight lines that connect joints) are then entered, with information about the colors that will be used to portray them. The joint and member data may be stored to tape and later retrieved, and files may be merged or superimposed to create more complicated figures.

After all the joints and members are in the database, the figure may be plotted or shown on the screen. What you see can be a "flat" picture (as if viewed from infinity) or a perspective view. The perspective may be normal or intentionally exaggerated.

You need not display the whole structure. Portions can be masked, as if they had been sliced off, and a small region may be blown up to fill the page or screen.

The point of view may be changed as desired. Rotations may be performed, on any axis and in any angle. Lateral displacements may also be performed.

Geometric calculations that ordinarily require many minutes of work can be done in seconds. Given three planes, the point of origin can be found or vectors may be added. You can even find out where a line will intersect an arbitrary plane.

## THE SOFTWARE

The program proceeds through many menus allowing you to set aside the manual after a few sessions. Since program execution sometimes goes for tens of seconds without any obvious screen changes, the almost continuous beeps and boops produced at the buzzer provide reassurance that the program is going on. Mercifully it is possible to cut off the music completely, if desired, by editing a program line.

The CAD.BA program, at 22652 bytes, is enormous by Model 100 standards. Comprised of largely uncom-

mented BASIC statements, it makes substantial use of the trigonometric functions in the BASIC interpreter. Variable types are explicitly declared to conserve precious RAM.

By the time the program actually gets running, less than 2 kilobytes (K) of free random access memory (RAM) remains. The Tandy 200, even when empty of files, only gives you some 19K, so Stereo-CAD will not work in that machine. This review discusses the Stereo-CAD program in the context of the Model 100, but Solar Steam also offers it for IBM PC-compatible computers, which have much more RAM.

The non-portable origins of the program are revealed by the use of the LOC function and LOCATE command, in parts of the program which never got executed during my experiments, but which would have crashed the program with ?FC and ?SN errors. The program has spaces between all the key words, which would be required in a GW-BASIC machine but which take up space needlessly in the 100. Solar Steam tells me future releases of the Model 100 software will omit the spaces and nonexistent commands.

Nearly every parameter (screen and plotter size, control characters, etc.) can be changed by editing initialization statements at the beginning of the program. The manual explains this in detail, and program comments for these lines also help.

The ON ERROR GOTO routines are quite general, again because the software is used on so many computers. I suspect most Model 100 users would want to modify the routines to make them specific to the 100.

## GOOD READING

The well-written hundred-page manual is simply printed and bound in loose-leaf form. There is, alas, no index, though the table of contents is of some help in finding desired sections of the text. Perhaps because the software is offered for use on many computer models with different BASICs,

*Text continues on page 47*











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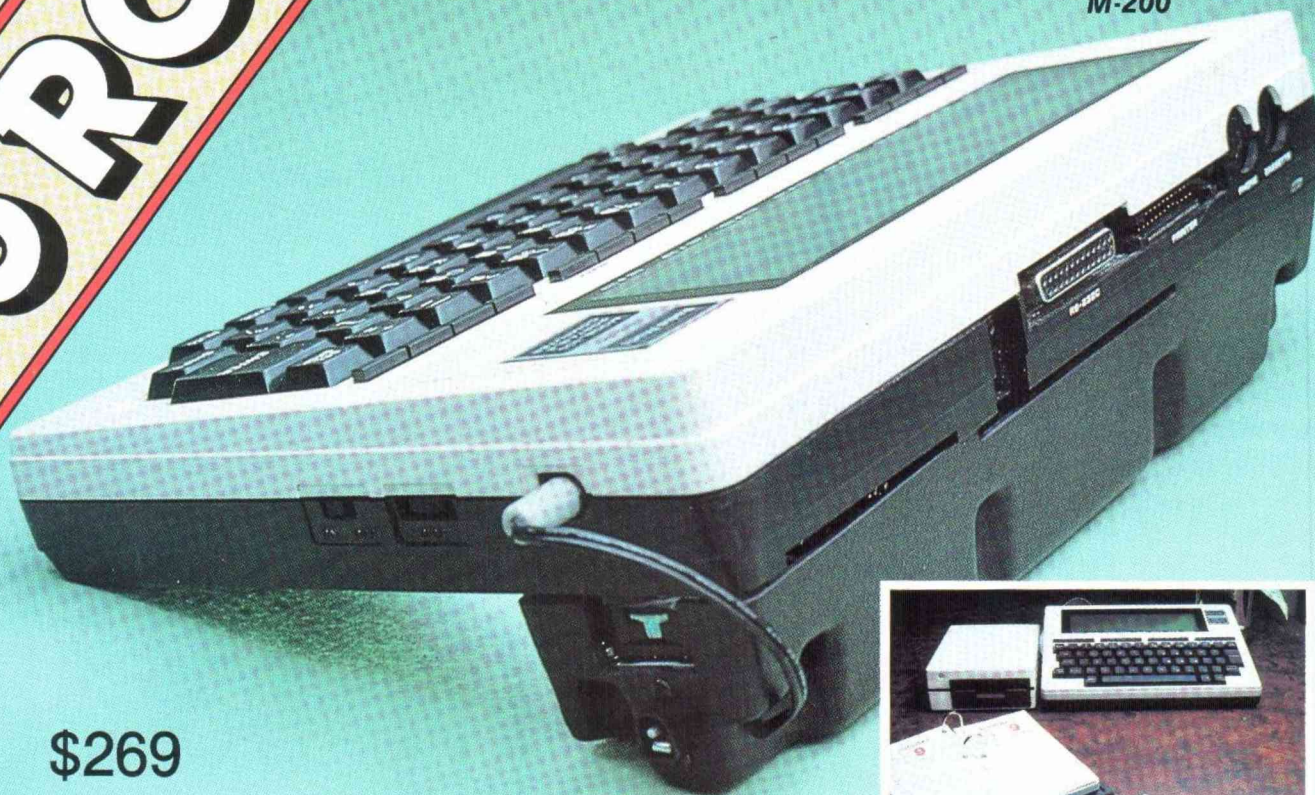




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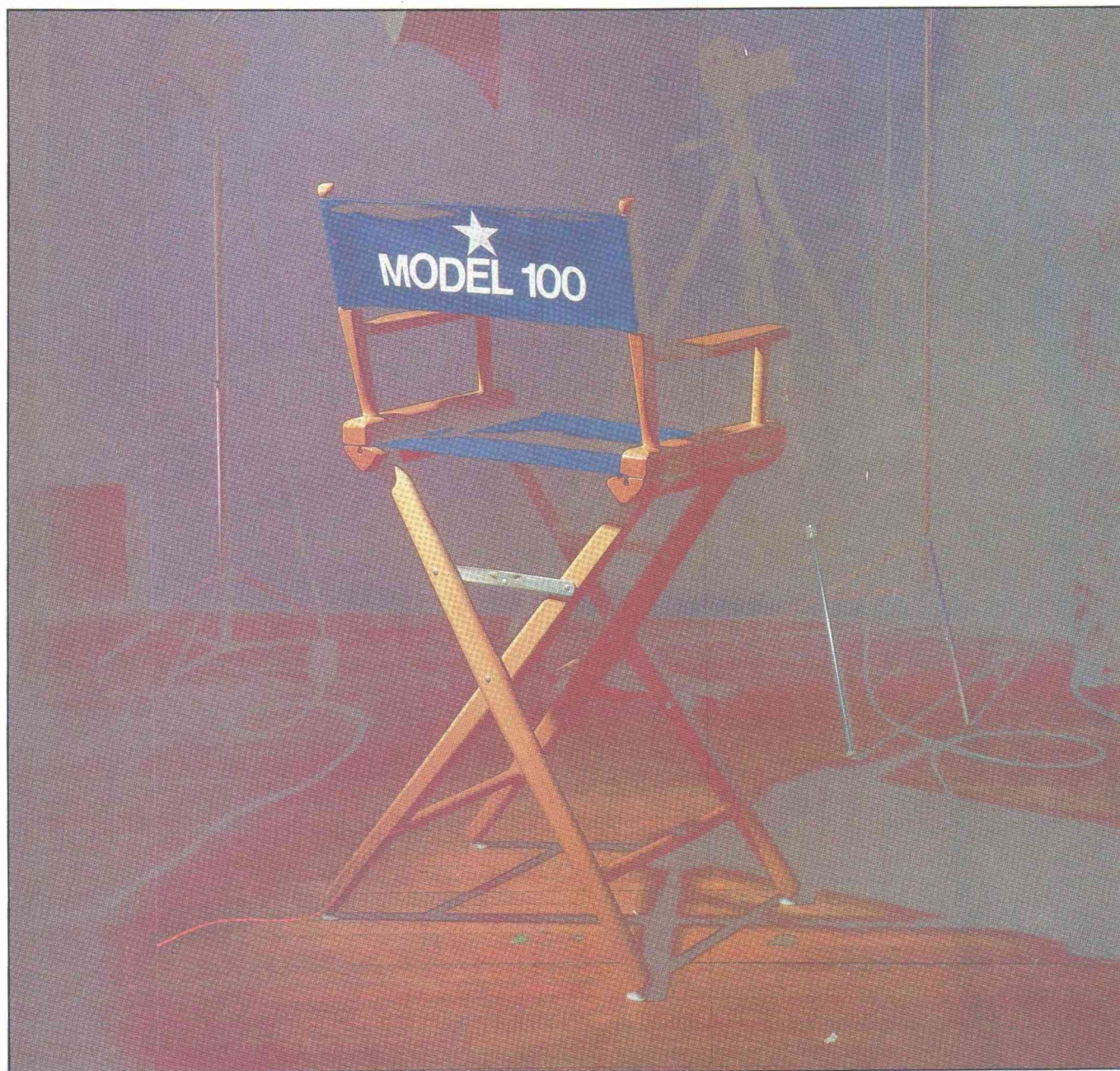
# Lights, Action Model 100!

*Portable computing goes Hollywood. Laptops find their way onto film sets and keep track of what will make the final cut.*

By Quint B. Randle

Until a year or so ago, Mike Burk and Steve Lomas were your typical video editors. After a show was shot by the camera crew, the contents of the reels and reels of videotape used to produce the show had to be logged longhand onto reams of paper before editing could take place. Each entry in the log provided information to help the editors locate each shot and put the show together.

Using this conventional method, an editor could spend as much as 20 minutes looking for a specific shot. As you can imagine, trudging through these log books containing shot descriptions, locations, etc., is not the most creative process in the world. And as most people know, TV shows and movies are not shot in the same sequence as they appear, but are shot according to convenience. So, film and video editing can be a time-consuming process to say the least — pulling each shot from a long list (and much longer tape) of choices.



PHOTOGRAPH BY BENJAMIN MAGRO



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Prod Name : Exercise for Health  
 Prod Comp : Jump Zero Productions  
 Misc Notes : Three camera iso

Prod Date : September 16, 1985  
 Prod No. : 1141955  
 Page 1

| Scene | Take | Time Code | Remarks   |
|-------|------|-----------|---|
|       |      |           | TAPES 1,2,3<br>Item 2 pages 2-4<br>camera 1 & vtr 1 - wide<br>camera 2 & vtr 2 - mlr<br>camera 3 & vtr 3 - other kids |
| 2     | 0001 | 09:47:42  | music starts  |
|       |      | 09:47:53  | action  |
|       |      | 9:49:52   | end   |
| 2     | 0002 | 10:02:37  | action  |
|       |      | 10:03:33  | mlr blows it here - ng  |
| 2     | 0003 | 10:04:42  | action  |
|       |      | 10:06:54  | end   |
| 2     | 0004 | 10:16:45  | music   |
|       |      | 10:17:08  | action  |
|       |      | 10:17:17  | ng  |
| 2     | 0005 | 10:17:34  | music   |
|       |      | 10:17:51  | action  |
|       |      | 10:19:52  | end - ok - best overall   |
| 2     | 0006 | 10:21:16  | kiat's line   |
| 2     | 0007 | 10:21:59  | melissa's line - ng   |
| 2     | 0008 | 10:22:24  | melissa's line - ok   |
| 2     | 0009 | 10:23:06  | melissa's line - ok   |
| 2     | 0010 | 10:25:57  | willy   |
| 2     | 0011 | 10:26:26  | willy   |
| 2     | 0012 | 10:27:07  | willy & ericka  |
| 2     | 0013 | 10:27:33  | willy & ericka  |
| 2     | 0014 | 10:28:08  | ericka  |
| 2     | 0015 | 10:28:35  | ericka  |
| 2     | 0016 | 10:28:53  | ericka with giggle - ok   |

Comprehensive Video Supply's program reads the VTR time code and stores it with the shot description.

## A PORTABLE TO THE RESCUE

Well now with the help of the Model 100 and a program they've written, Burk and Lomas of CCR Video Corporation in Hollywood are leaving the dirty work (searching, finding, organizing) to the Model 100 and concentrating on creative editing — and more importantly, a reduction in editing time that can cost upwards of \$500 an hour. Who wants to trudge through

messy production notes at those rates?

In order to understand the significance of how the Model 100 is uniquely solving some housekeeping problems inherent in the video editing process, one must first understand how videotape is "kept track of" through a numbering system called "time code."

Burk explains: "Videotape editing is controlled by a pulse that goes on the

tape, as well as the picture and audio, that breaks the tape down into fractions of seconds. It's called time code. There are 30 frames per second, so it breaks it down that way, and it puts that impulse down on the tape. When the tape is running in real time, you essentially have a clock running on that channel from however you set it.

"So the clock is running in real time like a normal clock. There are 30 frame

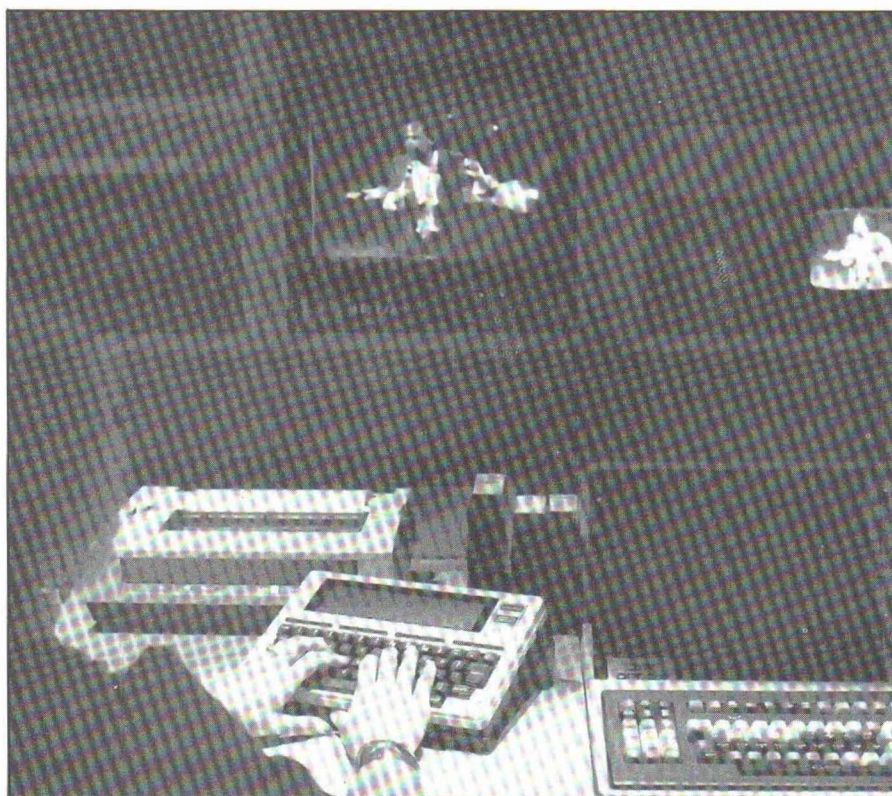


per second and 60 seconds per minute and 60 minutes per hour. Well, oddly enough, that's how clocks in the real world operate," says Burk.

Now enter the Model 100/200 into the task of video logging (listing what shots are on the tape by time code number), which is done to give editors an idea of what's on the tape. "We thought the only advantage to being able to do it on computer was if it were real portable; the only one that we found that was real portable was the 100," Burk offers.

Picture this: A video crew is out on location shooting a TV show. The production secretary logging the notes can go anywhere the cameramen go. And instead of fumbling with a pad and pen, quickly scrawling out each shot, "12:22.3 — dog barking at post-man," all he or she has to do is hit the Model 100's space bar and enter the shot's description on the keyboard.

Portability is actually one of the less important factors when several of the 100's built-in functions come into the picture (pardon the pun). The Model 100's internal clock is so similar to the way time code is organized, that if both the computer and the videotape



PHOTOGRAPH BY MIKE BURK

*The Zap! logging system produces an organized list of shots with descriptions.*

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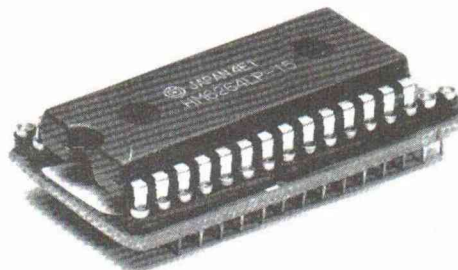
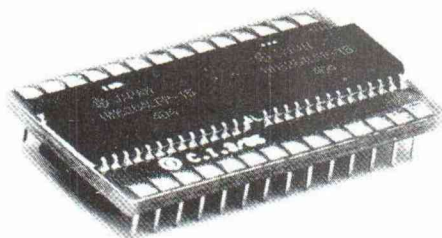
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recorder (VTR) are started at the same time, the clocks are just a few frames off.

"Since that is the case," continues Burk, "what we do — part of the program — resets the clock (in the Model 100) to the same time as the videotape. And then as it's running in real time, the program samples that clock (when the space bar is hit) and pulls it off and puts it in the file along with the shot's description.

This allows the video logger to concentrate on writing accurate shot descriptions that are stored along with the reel number and time code information. After a show is logged, the Model 100 can print out an organized list of shots and their descriptions. This is obviously much more efficient than notes scribbled with a ball point pen onto legal paper that can begin to stack up several inches high.

"The built-in features are real clever," says Burk as he goes on to explain how the 100 takes an editor beyond being more organized to being able to edit more quickly, and thus save a lot of money in editing time.

"LFIND will display all the occurrences of that string to the line

printer." This allows an editor to randomly access a list of all the shots of a "dog barking" for example. "That's a built-in program. That's something we didn't have to program it do, which probably would have added another 50 lines to the program."

So the bottom line is an editor can instantly know where a shot is located (within a few frames, or 30ths of a second), or several choices of shots, by entering a key word or phrase — without searching through a log book by hand and eye.

Another company, Comprehensive Video Supply of Northvale, N.J., has a similar program for the Model 100 available which physically interfaces with the VTR. Using a standard audio cable to connect the time code output on the VTR to the computer's cassette interface, the 100 reads the time code and can store it with the shot description.

"What we've done is taken the smallest, easiest to use computer we could find and we've turned it into a time code reader and tape logging system that's portable," says Comprehensive's Adam Greissman. Thus, this program provides a list that is correct

down to a 30th of a second.

While CCR's Burk feels that there are some definite advantages to being this exact, he does feel there are drawbacks also. "You start playing around with a computer and you realize how exacting you can make them be. The disadvantage is that it's got to be physically hooked up to the equipment. And sometimes in union situations ... that's not an advantage. You start connecting to that kind of stuff and a union guy has to get involved.

"We're talking logging here. And logging is meant to get close. It doesn't have to be exactly on the frame and exactly on the second. So it (the 100 and the VTR being hooked up together) seems like it cuts down a lot on the portability on the unit.

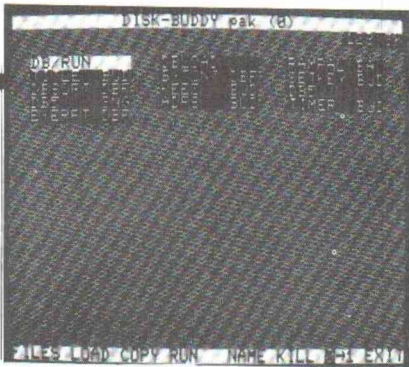
"The way everybody in the world has logged videotape up until now has been with a big yellow pad and a ball point pen. And you're lucky to get the minutes right, much less the frames. So we figured that's close enough for everybody. Let's not overkill this thing as people have a tendency to do. Let's make it real practical."

To this, Greissman sarcastically offers, "Oh right! That's a silly thing to

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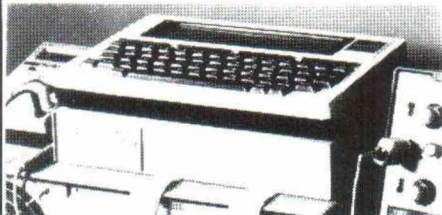
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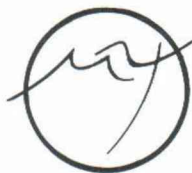
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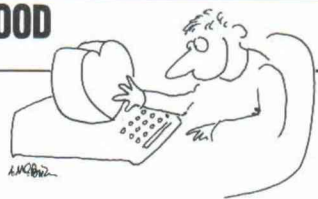


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## HOLLYWOOD



say. Sure they're might be some union situations, so you just don't use it." Continuing, he says he feels that this is an unlikely occurrence, pointing to the fact that a major network recently used the 100 and program in covering the Geneva Summit between Reagan and Gorbachev in November.

The data files created by Comprehensive's program are compatible with the company's Tape Master database for the IBM PC. "So if you were to take your files and send them to an IBM PC — and let's say you're all of the sudden managing a library of 1,000 reels of tape — and you just want all the shots of Laguna Beach at sunset done between April and May 1985, you can get that kind of sophisticated retrieval," Greissman explains.

Another difference between the two programs is the way they are being marketed. Comprehensive's program, called "Log It 100," sells for \$349 including the audio cable, manual and ROM chip containing the program. CCR Video, on the other hand, is marketing the 100, the program and a logger as a service called "ZAP!" for \$35 an hour. This is intended to bring more customers into the post-production facility by reducing editing time.

Because the production log, or notes, take up a lot of memory, Burk and Lomas' program works best on a 32K machine. The program, stored in random access memory (RAM), takes up about 5K, "which is not bad," Burk feels. "But it stores information in regular ASCII format, so it starts using up a lot of space. So after an hour of logging you really have to dump it to something or other."

For Burk and Lomas, that something or other is either the new Tandy disk drive, which offers disk storage at an affordable price, or the "Chipmunk" from Portable Computer Support Group in Dallas. While the PCSG drive is more expensive, it features random access to all the data files on a particular disk. This is important because a videotape editor can search an entire disk full of logging notes at one time without searching file by file.

"If you say 'find this string,' it looks for that string on the entire disk regardless . . . It's great because it's like having all of that in one big RAM file. Which is essentially how the disk controller thinks of it," explains Burk.



## HOLLYWOOD

Currently, CCR is working on a show called, "Hollywood Roadshow," which is a music video-oriented program where the hosts do spot interviews and concert reports from locations around the country, in addition to showing music videos.

"So they're coming back with a lot of wild videotape, with a little bit of everything on it, and it's been really helpful to go down and log the stuff real accurately so they can go back and find shots and clips," Burk says.

Another immense project that the company is about to embark on, which will now be less immense thanks to the Model 100, is logging 450 rolls of 2 inch videotape from the "CBS Sports Spectacular," which was on the air for eight years during the late 60s and early 70s. CCR plans on packaging and selling the footage.

Continues Burk, "One of the things we're going to market them with is a complete, accurate log of all this." And with that, the ability to search and find shots very quickly. For instance, if you wanted a list of all the shots featuring Kathy Rigby. This would just take a few keystrokes, as opposed to a long search through the video logs.

Burk and Lomas are constantly improving the program. Currently they are on version 3.2. They have also developed an auxiliary program to be run along with it to be used with film to capture edge/frame numbers out on location.

"It's harder to do it in the field, but it's even harder to take regular old notes in the field," adds Burk.

Looking back, Burk says that when the two started writing the program, they weren't expert programmers. Lomas had just purchased a Model 100 and wanted to do something useful with it. They didn't really know what they were getting into.

"As we got about a week into this I said this is going to be real serious. Why don't we sit down and actually make a real program out of this?"

And that's exactly what they did.

Although CCR's "service" and Comprehensive's "program" differ somewhat in style and execution, the two sides do agree on one thing: The Model 100 is the best vehicle to make video logging, editing and tape storage easier, more organized and much faster than before. □

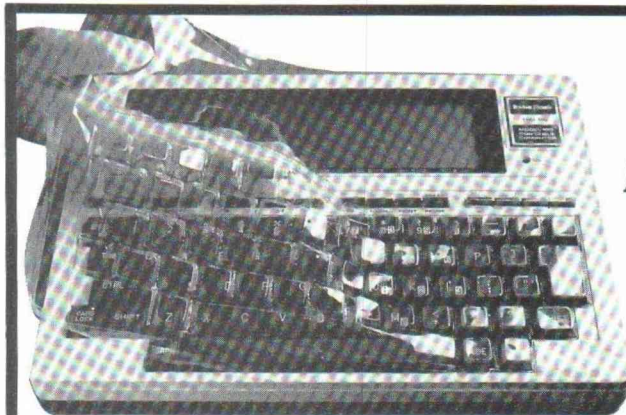
*Quint B. Randle is editor of "On Location" magazine, a monthly trade publication for the film and video production community, and an avid Model 100 user.*

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WRITE ROM is the definitive word processing extension for the Model 100. PCSG produced the first text formatter for the Model 100, now sold by Radio Shack as Scripsit 100. Now, 18 months later, PCSG introduced WRITE ROM. Those who have experienced it say WRITE ROM literally doubles the power of the Model 100.

WRITE ROM — as its name implies — is on a snap-in ROM. You simply open the little compartment on the back of the Model 100 with a quarter and press WRITE ROM in. It's as easy as an Atari game cartridge. You can use other ROM programs like Lucid whenever you wish.

WRITE ROM lets you do every formatting function you'd expect, like setting margins, centering, right justifying and creating headers and footers. But it does them under function key control.

WRITE ROM remembers your favorite format settings so you can print a document without any setup, but you can change any formatting or printing parameter instantly with a function key.

WRITE ROM's "pixel mapping" feature shows you an instant picture on the screen of how your printout will look on paper.

In all there are 64 separate features and functions you can do with WRITE ROM, and some of these features are truly breakthroughs for the Model 100.

First, WRITE ROM lets you do search and replace. Any word or phrase in a document can be searched for and replaced with any other phrase where the search words appear.

Second, WRITE ROM lets you send any text (formatted or not) to any other computer over the phone with just a function key. What's more, it dials and handles sign-on and sign-off protocol automatically.

Third, WRITE ROM has a wonderful feature called Library that lets you record favorite phrases, words or commonly used expressions (often called boilerplate).

Any place you wish Library text to appear you just type a code. WRITE ROM automatically inserts the text just like a Xerox Memory Writer. Picture what you can do with that kind of capability.

WRITE ROM is blindingly fast. No one can claim faster operation. Because it is on ROM it uses virtually none of your precious RAM. It works with any printer, serial or parallel. You can make a duplicate copy of a document file under a new filename. Rename or delete (kill) any RAM file with function key ease.

This description only scratches the surface of this amazingly powerful piece of software. Dot commands allow control of such things as margins, centering, line spacing and other changes in the middle of a document. Most are WordStar<sup>™</sup> compatible.

A mailmerge feature allows you to send the same document to every name on your mailing list, personalized for each recipient.

WRITE ROM enables you to do underlining, boldface and correspondence mode as well as any other font feature like superscripts that your printer supports, in a way that many users say "is worth the price of the program."

To underline you don't have to remember a complicated printer code. You just type CODE u, and to stop underline, CODE u again. The CODE key is to the right of your spacebar. Boldface? CODE b to start and stop. Easy to remember and do. Five different printer features of your choice.

We couldn't list all the features here. For example, you can select not just double space but triple or any other. You can use your TAB

key in a document. WRITE ROM allows you to indent. This means you can have paragraphs with a first line projecting to the left of the rest of the paragraph. WRITE ROM has a feature unique for any word processor on any computer. It's called FORM. FORM is an interactive mechanism that lets you create screen prompts so that you or someone else can answer them to fill out forms or questionnaires.

With FORM, any place that you had previously typed a GRAPH T and a prompt in a document, WRITE ROM will stop and show you that prompt on the screen. You can type in directly on the screen and when you press F8 you see the next prompt. It goes to a printer or a RAM file.

Think how you can use FORM. A doctor or nurse could use it for a patient's history with each question appearing on the screen. An insurance salesman could use it for his entire questionnaire. You could construct a series of prompts to answer correspondence, typing the answers, even using Library codes. This feature lets you answer letters in rapid-fire fashion, each with personalized or standard responses.

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the discussion of the various error codes is quite nonspecific. Some of the error numbers given in the appendices (e.g. WHILE without WEND) simply cannot occur on the Model 100.

Also included with the manual was a nicely indented, formatted and cross-referenced listing of the BASIC code (alas, uncommented). This would be a great help to anyone needing to modify the program for a particular plotter or storage device.

## CUSTOMER SUPPORT

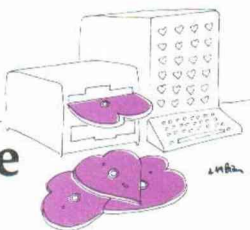
I think most people whose occupations lead them to purchase Stereo-CAD will not need much customer support; a user who is comfortable with BASIC programming and three-dimensional relationships should be able to overcome any difficulties that may arise.

Solar Steam prints a phone number in the manual, and the number was answered by someone who had actually used the program many times. This is in contrast to the experiences many of us have had with sellers who operate through a post office box and answering service.

I reviewed version 2.1, dated April 14, 1985. The manual says future revisions will be offered to current owners, and it appears Solar Steam does revise the software from time to time.

Certainly, Stereo-CAD is not something everyone should rush out and buy right away. That's because it's not for everyone. But if you need to do design and analysis of three-dimensional structures, this may be the software for you. □

## More Cassette Help



### XIN/XOUT

Cassette-file management program  
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(301) 345-9473

By PAUL J. PERRY

**D**ealing with cassettes. Some people are better at it than others.

But nearly everyone agrees, anything to make it easier is something to consider.

XIN/XOUT is a file management program for cassette tape. Together the programs perform the same function as an operating system on a disk drive. They maintain a directory of files on tape. Both programs are written in BASIC but still execute at a reasonably fast speed. Instructions are included but are rarely needed because the programs are easy to load and execute.

XOUT is the program used to save your files from random access memory (RAM) to tape. Once you execute it, XOUT displays the files in your computer including the paste buffer and the unnamed BASIC program in RAM. You then highlight files to be saved to tape by moving the arrow keys and pressing Enter.

XOUT also displays memory statistics at the bottom of the screen such as amount of memory free, memory used and the total amount of memory available. To save highlighted files to tape, press F1. You'll be asked for the number of copies. BKI recommends two or three. Other function keys allow you to direct the file to a printer or LCD display.

XOUT allows integration with another BKI program, a text formatter called DO4MAT (see *Portable 100*, January 1986). DO4MAT, however, is not required to run XOUT.

A great feature of XOUT is the ability to kill a group of files with a single keystroke. If you've just saved all the programs in memory to tape, you do not have to go through the tedious process of typing `Kill "filename.xx"` to remove them from RAM. You simply highlight the files to delete, press a function key, and presto — they're gone.

## WHAT GOES OUT MUST COME IN

XIN loads programs into memory which have been saved with XOUT. The first file XIN automatically loads is a file called D\*.DO. It's a small file which tells XIN what files are available to the user and how long they are. Once this is done the same menu is displayed as with XOUT.

The procedure to load files with XIN is similar to saving them with XOUT. You highlight all files you want loaded into memory using the arrow and Enter keys. By pressing F1, all of them are loaded into RAM. As with XOUT, you can send a file to the screen or printer and the program can be integrated

with DO4MAT.BA. Other function keys allow you to restart and to return to the main menu.

A great feature of XIN is the ability of the program to show how much memory will still be left in your machine after the selected files are loaded. This is helpful when loading programs that require a minimum amount of memory space to run.

## EVER IMPROVING

BKI has recently announced a new version of XIN/XOUT called SXIN/SXOUT. The author says he was advised that the names of their programs weren't "sexy" enough. However, he resisted the urge to name the new programs SEXIN and SEXOUT.

The differences of the new programs are:

- SXIN/SXOUT will save and restore .DO files in a single record. This will greatly reduce the time and tape required at the expense of not being able to load the .DO files without SXIN.

- The List key and the 4MAT key have been deleted from the new programs.

- Each program is about three-fourths the size of the corresponding XIN/XOUT program.

Unfortunately the new programs cannot be used with DO4MAT.BA because DO4MAT was designed to format files directly from tape to printer so data files and DO4MAT don't have to be in memory at the same time. For this reason the single record .DO tape format couldn't be used in XIN/XOUT. SXIN/SXOUT will be sold as a separate cassette file manager.

That is all there is to it. XIN/XOUT is a very easy set of programs to use. They make using cassette tape on the Model 100 less of a chore. Unfortunately as we all know, cassette tape is s-l-o-w. The way XOUT saves files, and for that matter the way the Model 100 saves onto cassette tapes is consecutively. That is, one after another. If you go into XIN and choose a file to be loaded and it's the last one saved, you still have to go through all the others first. This is a very time consuming process.

As a package XIN/XOUT work well together. They do make dealing with cassettes easier. But the fact remains, you're still using tapes. If you've resigned yourself to that, then these could just be the programs to put your cassette programs into order. □



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## NEW MASS STORAGE SYSTEM FOR ONLY \$89.95

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A&J Micro Drive would like to announce its new portable System 100. This mass storage system, designed for the Radio Shack Model 100, offers high speed storage for the price of a cassette.

The System 100, with electronics and software designed by A&J Micro Drive, uses the latest Micro Wafer Technology developed by Entrepo Inc. The new system combines high speed digital electronics with low cost, high performance Micro Drive Technology.

### INTERESTED . . .

The 100's compact operating system is smaller than that of the Radio Shack Disk Drive. The latest release of the operating system may be down loaded by calling the computer at A&J Micro Drive using the simple instructions included with the unit.

The System 100 may be small enough to fit into a corner of your briefcase and require only 4 "AA"-size batteries for months of use — but don't be fooled, our new unit is packed with state-of-the-art electronics. It will give you ultra reliable program loading as fast as the disk, and twenty times faster than the cassette.

The System 100 uses a miniature endless loop tape cartridge called a Micro Wafer. The Micro Wafer, approximately the size of a credit card, is completely enclosed in a protective housing. A built-in cover retracts as the tape is inserted into the drive, exposing the video-grade digital magnetic tape to the read/write head. Micro Wafers come in several lengths, allowing the customer to choose the length best suited to his application.

### STILL INTERESTED

The price of \$89.95 includes a drive system with cable attached, one Micro Wafer, operating instructions and one-year membership to the A&J Bulletin Board.

#### Manufacturer's Specifications

System 100  
A&J Micro Drive  
1050 E. Duane Ave. Ste "I"  
Sunnyvale, CA 94086  
(408) 732-9292

#### Price: \$89.95

Baud Rate: 14,000 bits/second  
Tape Speed: 10 inches/second  
Capacity: 1.5K bytes/foot tape  
10' = 15K bytes  
62' = 100 K bytes

Lengths: 10, 20, 35, 50, & 62'  
Power Supply: 4 "AA" cells  
Connection: Uses RS-232 port  
Cable: 30 inch RS-232 attached  
Size: 6 x 4 x 2.5 inches  
Weight: 24 ounces

## ONLINE SERVICES from page 32

message-sending between subscribers on that service. A CompuServe subscriber, for example, can send messages to other CompuServe mailboxes, but not to a friend who subscribes only to ITT Dialcom.

Other services are more flexible. Some, such as MCI Mail, are attached to the immense Telex network — making E-mail attractive for small business who'd like to advertise their Telex number.

Still others offer printed output of the messages, for sending notes via regular postal service to non-subscribers.

### FRIENDS AND RELATIONS

Many non-business computer users find companionship in online special-interest groups. These groups, called SIGs, look like miniature online services dedicated to a specific group of users. Public and private E-mail between those with the special interest are an asset to those desiring to associate with like-minded people. Often, files and programs can be transferred between users. Also, guest speakers can live up real-time interactive conferences — sometimes with hundreds of participants sitting in the comfort of their own living room.

The range of special-interest groups is incredible. One online service, Columbus, Ohio-based CompuServe, boasts dozens of SIGs, ranging from the technical to the sublime. Computer SIGs cover many models, including the Apple Macintosh, IBM PC and Digital's VAX minicomputer; software forums are sponsored by vendors such as Borland International.

Not all special-interest groups found on online services are computer-oriented. CompuServe also hosts a firefighter's SIG, a clearinghouse for freelance writers, a support group for human sexuality and a much-needed hideout for punsters.

### WHAT'S NEW

The immediacy of electronic communications is a natural for the Information Age. Instant access to late-breaking news and stock quotes is a major feature of services such as NewsNet, Dow Jones News/Retrieval and ITT Dialcom.

Electronic news takes several forms. A common form is the electronic ticker-tape, displaying recent stock-market activity only seconds after Wall Street's Big Board. Another is the elec-



ONLINE SERVICES

tronic edition of national or special-interest magazines, newspapers and newsletters.

Perhaps the most exciting new service is the type implemented on ITT Dialcom and NewsNet. On those systems, the subscriber defines a number of topics of interest, or keywords. Each time a news item enters the online service, from AP, UPI or another source, every word in the item is checked against the subscriber's keyword list. If there's a match, that item is E-mailed to the subscriber.

With keyword searching, business planners keep track of industry trends, competitor's advances or new application idea. Hobbyists can watch for new happenings in their field and news buffs can keep up with foreign politics in detail.

Of course, keyword searches of all recent news items can be conducted manually, turning the online service into an up-to-date online encyclopedia.

LOOK IT UP YOURSELF

Speaking of encyclopedias, those invaluable reference works are maintained online by several dial-up services.

Both Dow Jones News/Retrieval and CompuServe offer Grollier's Academic American Encyclopedia. NEXIS, a service of Mead Data Central in Dayton, Ohio, maintains the entire Britannica 3. But standard encyclopedias are only the beginning.

The power of online services is shown by the full-text search — like the news hits mentioned above, only expanded to the entire realm of printed matter.

Bryn Mawr, Pennsylvania-based NewsNet, supplies the complete text of over 200 industry newsletter, magazines and newspapers online. Individual articles or issues may be printed or downloaded to the subscriber's computer. But that's not all.

Given a list of logical keywords (like *poverty AND medicine AND research AND children*), the online service can return a list of relevant articles from its entire database. This list may be titles, dates, authors or even one-page abstracts. From that list, the subscriber may select a list of the most relevant articles for downloading. In the case of ITT Dialcom, reprints of the articles are mailed to the subscriber. The service is expensive, but can't be matched as a source of timely information for reports or research.

STILL HUNGRY?



LISTINGS, HERE!  
HEY, GET YOUR LISTINGS!

Spicy programs pepper the world of Tandy portable users . . . more than can be included in the pages of Portable 100/200/600 magazine. The magazine will continue to include listings—and for those with heightened cravings, the Editors are pleased to offer a monthly supplement of rich desserts.

The Portable Program Review will tempt you each month with a more'ish diet; more listings to run on the Model 100, Tandy 200, 600 and NEC . . . more games . . . more utilities . . . more graphics . . . and home-cooked favorites.

Popular *pièces de resistance* from former issues will be brought back to savor. And all offerings, old and new, will be served by the Portable 100/200/600 magazine's technical staff who will be on hand to answer your questions.

Your 12-issue newsletter subscriptions will enhance the benefits of both a valuable magazine and computer.

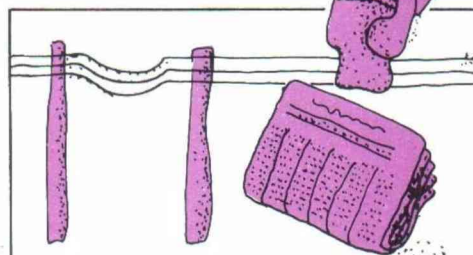
So if you feel the need to snack between meals, supplement your Portable 100/200/600 appetite with The Portable Program Review. Here's how to make the newsletter's next seating:

1. Locate the Portable 100/200/600 Reader Service Card in this issue.
2. Check the letter for The Portable Program Review newsletter.
3. Enclose the card with your check or money order in the amount of \$29.97 for One Year (12 issues) of The Portable Program Review newsletter. Or you may pay by MasterCard or Visa. (Please be sure to include the card number and expiration date.)

Bon Appetit



## ONLINE SERVICES



### STANDARD & POORS

Online financial information is more than simple stock reports. Dow Jones News/Retrieval Service provides nearly every conceivable financial report — some updated every fifteen minutes or less. These include:

- Financial news of over 6,000 companies
- Weekly economic updates
- Wall Street Journal highlights
- Current stock quotes from the New York, American, Midwest and Pacific stock exchanges
- Historical Dow Jones averages
- Standard & Poor's company profiles online

- Commodity futures quotes
- Historical stock quotes
- Tracking of a stock portfolio

### SPECIAL SERVICES

What other features are available through online services? Many valuable programs are offered by third-party companies.

This leads to duplication of services available. Several of the services below can be found on more than one online service, so take advantage of the least expensive service, if possible.

Movie and trivia buffs can check movie reviews, covering films released since 1926.

There are sports and textual and graphics weather reports — the latter being of special interest to aviators.

The Official Airline Guide contains schedule and fare information on more than 800,000 flights — useful for planning business trips and flights.

Electronic shopping and banking services abound. Many specialty-product mail order firms support online browsing and ordering, sometimes with significant discounts. Several na-

tional banks post their interest rates online, for investment comparison shopping.

### HOOKING UP

Joining an online service is relatively painless. The simplest method is often to call the service's customer support number and request access.

Some services, such as General Electric's GENie, offer electronic sign-up: Dial the local access telephone number, use a special guest userid (user identification code) and provide the required information online. Within a few days, a packet containing the reference manual and permanent user number is mailed to the new subscriber.

Some online services, such as CompuServe and Dow Jones News/Retrieval, sell *starter kits*. These contain a temporary userid (often with several hours free connect time) and a printed user's guide. Included in the kit is the application for a permanent subscription.

### RING IT UP

Getting a connect-time invoice is like paying the American Express bill after

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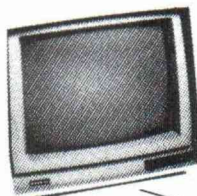
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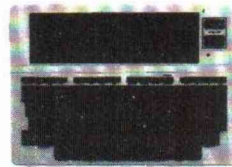
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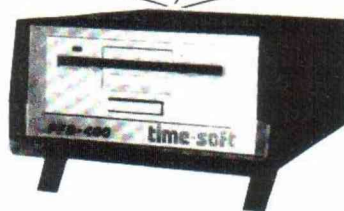


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## ONLINE SERVICES

a week-long vacation — unpleasant. The costs of going online can build up, especially for the unwary.

Initial signup fees, including the prices of starter kits, vary from free to over one hundred dollars, depending on the type of service. Annual or monthly service charges too can range from the non-existent to hundreds of dollars each year.

Then the major expense: connect time. Usually measured to a fraction of an hour, prices vary immensely, depending on the online service used, time of day, communications speed, type of local access telephone number and which programs are being accessed. Sometimes, there's a cost for specific services, such as a flat rate per news item retrieved or electronic letter transmitted.

### IT'S WORTH IT

Certainly the costs of going online are high — for the active consumer probably between \$20 and \$50 per month. But view the benefits: tremendous libraries of information, sources of almost-free software and the thrill of exploring the new and uncharted world with your modem. □

## A Sampling of Services

### CompuServe

P.O. Box 20212  
Columbus, OH 43220  
(800) 848-8199  
(614) 547-0802 in Ohio  
Circle No. 101

CompuServe is the largest consumer online service, and perhaps the most familiar to Tandy portable owners. With more than 200,000 users, CompuServe offers an extraordinary array of services and programs to its subscribers.

Electronic mail between all users is handled through *EasyPlex*, along with separate public and private messages available through the many *Special-Interest Groups*. Dozens of SIGs cover portable computers, health, writing and nearly every conceivable topic.

The *National Bulletin-Board System* offers users inexpensive advertising with its three message types: NOTICE, SELL and WANTED. The *CB Simulator* gives conversational subscribers in-

stant access to other users in real time, for business or pleasure.

News services are provided by the Associated Press along with electronic versions of several newspapers, magazines and other publications. Financial information includes *MicroQuote* for trading statistics and historical quotes and *Standard & Poor's General Information File*.

Other features include shopping on *The Electronic Mall* and access to the *Official Airline Guide*, *Grolier's Academic American Encyclopedia*, *EMI Flight Planning* and several real-time, multi-user games.

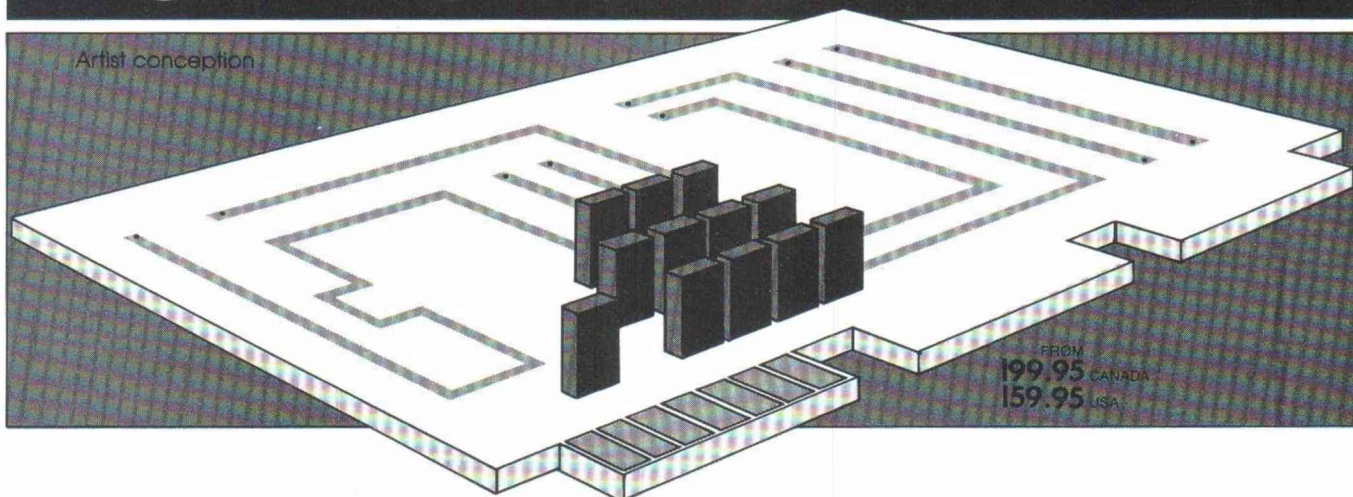
### GEnie

General Electric  
401 N. Washington St.  
Rockville, MD 20850  
(301) 340-4387  
Circle No. 104

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## ONLINE SERVICES

and features. *GE MAIL*, GENie's E-mail service, offers subscriber-to-subscriber memos, complete with subject lines, routing of carbon copies and an advanced line editor.

The *Livewire* CB simulator provides 40 channels, similar to Citizen's Band radio, only on a national basis. The *National Real-Time Conference* hosts special-purpose discussions in electronic meeting rooms. This service emulates a real meeting hall, with such commands as KNOck, PRIVate, RAIsE-hand, change ROOMs. The meeting host can set a DONtdisturb sign, LOCK the room, post a NOTice on the door, or even request a GENie STEnographer.

The GENie equivalent of the special-interest group is the *Roundtable*. About a dozen of these exist to date, including the *Laptop Roundtable* sponsored by *Portable 100* magazine.

### NewsNet

945 Haverford Rd.  
Bryn Mawr, PA 19010  
(800) 345-1301  
(215) 527-8030 in Pennsylvania  
Circle No. 105

NewsNet is geared to one objective: to be the best provider of up-to-date news and relevant text. And, despite the high connect-time costs, NewsNet is worth its weight in libraries.

Full-text search is the key to NewsNet's stock of online back issues of newsletters, magazines and other publication. Given descriptive keywords, NewsNet can find needed information quickly, though not inexpensively.

The *Newsflash* service scans each new newsletter — literally hundreds — as it enters the NewsNet system. Every time a user-specified keyword appears in that publication, it's flagged for the subscriber's attention.

NewsNet's E-mail service reflects the information point of view: in addition to contacting other subscribers, the user can converse with the editor of each of NewsNet's supported publications. Other services include the *Official Airline Guide* and *TRW Business Credit Service Reports*.

### Delphi

General Videotex Corp.  
3 Blackstone St.  
Cambridge, MA 02139

(800) 544-4005  
(617) 491-339 in Massachusetts  
Circle No. 102

Delphi, though one of the smaller online services, offers many features. The *MAIL* service offers member-to-member correspondence, Telex transmission and reception and access to the U.S. Postal Service's *E-COM* system.

A unique feature is the half-gateway between Delphi and CompuServe/The Source: Delphi subscribers can send messages to the other services, but not vice-versa.

Delphi's *CONFERENCE* system combines the free-wheeling dialog of CB with the structure of scheduled conferencing. Delphi offers an easy way of scheduling conferences and checking for meeting of interest.

Delphi also offers a multiple-topic bulletin-board for announcements, item-wanted and for-sale messages. Dozens of *Special Interest Groups* add to the community feeling on Delphi.

In terms of information, Delphi offers the *Kussmay! Encyclopedia*, *NEWS-A-TRON*, *Comp-U-Store*, *Security Objective Service*, *The Official Airline Guide*

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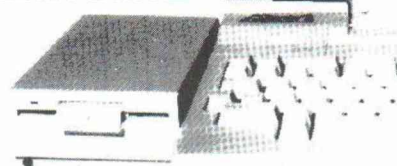
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## ONLINE SERVICES

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Princeton, NJ 08540  
(800) 257-5114  
(609) 452-1511 in New Jersey  
Circle No. 103

Dow Jones News/Retrieval (DJN/R) is the ideal source for financial news and information. Business features include: *Dow Jones News*, similar to the old Wall Street broadtape; highlight of the *Wall Street Journal*; current and historical stock quotes and access to present and past *Dow Jones Averages*.

DJN/R also provides full-text searches on back issues of *Barron's*, *Wall Street Journal* and *Dow Jones News*. Financial services are provided by *Disclosure II*, containing information filed with the Security Exchange Commission, along with corporate earnings estimates, weekly highlights from the *Merrill Lynch Research Service*, the *Official Airline Guide* and *Standard & Poor's Online*.

DJN/R's non-financial databases include the *Academic American Encyclope-*

*dia*, *Peterson's College Selection Service*, *Cineman Movie Reviews*, *Comp-U-Store*, and weather, sports and world news.

Electronic mail for DJN/R is handled by *MCI Mail*, a separate E-mail service. MCI and Dow Jones have a reciprocal agreement, where subscribers from each service are able to access the other automatically. MCI Mail includes subscriber to subscriber mail, access to Western Union's Telex network and express mail delivery.

### The Source

1616 Anderson Rd.  
McLean, VA 22102  
(703) 734-7500  
Circle No. 106

The Source offers an extensive electronic mail system, called *SourceMail*. Subscribers can send messages to individual or to online mailing lists of hundred of customers or business associates in one operation. Mail received can be scanned by subject, forwarded to other subscribers or stored online for future reference. Mail can also be sent express and return receipt requested.

The Source maintains a voluntary lists of member names, addresses and

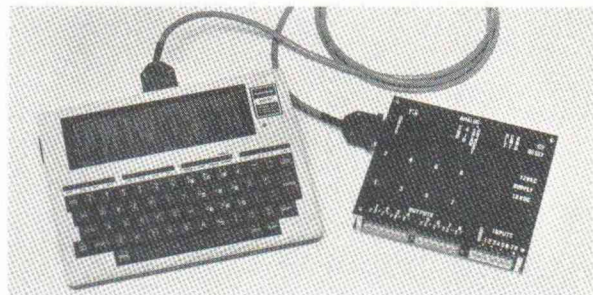
interests that can be scanned by any subscriber — useful for finding help or new friends. The *POST* bulletin-board offers more than 75 categories in which users can post announcements, wanted, for sale or any other message.

The *CHAT* online conversation can take place between any two users. For some applications, this may be more convenient than a voice call, especially with the ability to create accurate transcripts. On a more enhanced scale, *PARTI* is a dynamic online conferencing system available for both public and private conferences.

News is provided by the *United Press International Newswire*, the *Scripps-Howard News Service*, *Associated Press Videotex* and the text of many popular newspaper and magazine columns.

Full-text searches of hundreds of periodicals is available — at hefty connect-time charges, though. Financial news is available through *Instant Online Trading*, *Quick Quotes*, *STOCKVUE* and several investment services and newsletters.

The Source also provides general-interest services, including *Comp-U-Store*, *The Official Airline Guide*, *AccuWeather* and *A-Z Travel Service*. □



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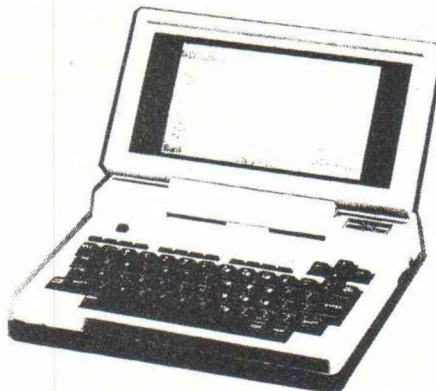
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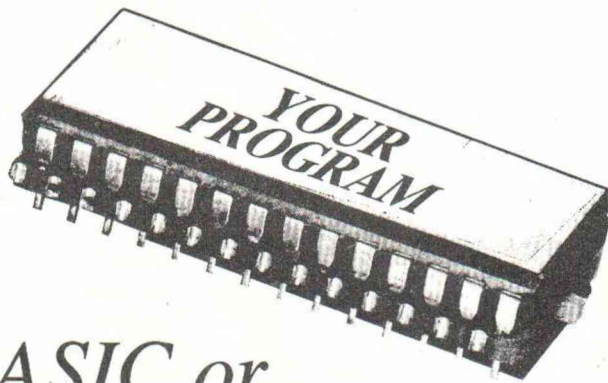


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without modems.

The direct connection is made from the RS-232 port on the 100 to the asynchronous adapter (RS-232 port) on the PC. A standard 25 pin serial cable and null modem adapter are needed.

I use the adapter on the Model 100 end. It allows me to connect any 25 leads on one end to any 25 on the other using jumpers. You only need to connect nine pins, which is typical of most null modem adapters. Pin assignments are shown in Figure 1.

If you don't want to wire the adapter yourself, you can buy a pre-wired null modem adapter at most computer stores.

A nice (and little used) feature of MS-DOS 2.1 and later versions, allows any terminal device connected to the PC serial port (i.e. RS-232 port) to take over control of the PC. The command is CTTY. It effectively disables the PC keyboard and monitor and directs input and output to whatever is connected to the named port. In this case, it's a Model 100 connected to the serial port.

We can use this feature to download from our PC. With it, a communications program in the PC is unnecessary and up- or downloading becomes simple.

This is how you set up your PC:

1. Boot your PC with MS-DOS 2.1 or higher.

2. Enter the Mode command to initialize the serial port. I use `MODE COM1:30,E,7,1`. COM1 represents serial port 1, 30 means 300 bits per second (bps), E is even parity, 7 means seven data bits and 1 is one stop bit. The settings you use can be different, but no matter what they are, make sure they're the same used for the Model 100.

3. At the prompt, type `CTTY COM1`. This gives control to serial port 1 and the device connected to it, in this case the Model 100. You'll notice the PC keyboard and display are disabled. Nothing can be entered in and nothing is echoed back to the screen.

To transfer control back to the PC, type `CTTY CON`. Of course, rebooting the system will also work.

4. Now set the communication parameters on your 100 to match those on the PC. Enter Telcom and press F3 (Stat key). Type in `37E1E,10`. A 3 must be used for the 100's RS-232 port to "work." The default in the 100 is M which is for the internal modem. I forgot about this initially and wondered why I couldn't establish communications. The seven is for the number of



data bits, E is for even parity, there's one stop bit, XON is enabled and 10 is the dial pulse rate.

Some of the settings, such as XON, are unimportant for our purposes but be aware of these settings for other communication needs. Also, you must change the 3 to M in order to use the internal modem.

5. Now press F4. The screen will display the new definitions of F1 through F8, indicating you have successfully entered Terminal Mode.

6. Press Enter. This keystroke should go to the PC as a carriage return (CR) and line feed (LF). The PC should return a MS-DOS prompt A> to the 100. When you get this prompt, you're as good as there.

7. Press F2 on the 100. You'll be prompted **File to download?** Enter the name the file will be stored under on the 100. For example, PGM.DO. After hitting Enter, the Down prompt above F2 will change to reverse video indicating the download function is ready.

8. Now enter the following MS-DOS command on the 100: `COPY d:filename.ext COM1`. The character *d* is the PC drive where the file resides (usually A or B). *Filename.ext* is the name and extension of file to be downloaded.

9. Press Enter and that's it. The PC's disk drive light will go on and the drive will start. The 100 will display the data as it is downloaded into RAM.

When it's finished, the MS-DOS message **1 File(s) copied** will be on the 100's screen followed by the prompt A> on a new line.

10. Press F2 to exit the 100's download function. The file will be in memory and the filename (see Step 6) will be displayed on the main menu. Before using the file, one or two extraneous MS-DOS commands at the beginning and end may have to be deleted. Remember, everything that MS-DOS displays goes to the 100, and since it's in download mode, everything goes to your named file.

#### FROM THE 100 TO THE PC

Uploading from your portable is just as easy. But before you begin, you must make sure you have a carriage return (CR) as the last character in the file to be uploaded. This acts as an end of file indicator. Uploading will not complete unless this is present.

1. Follow the procedures outlined above to the point of getting the MS-DOS prompt A> on the 100.

2. Enter the following MS-DOS command on the 100: `COPY COM1 d:filename.ext` In this case, *d* is the PC drive

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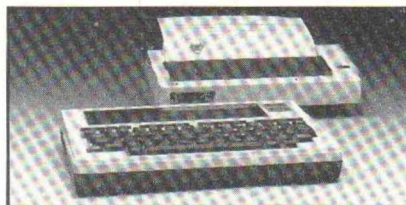
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| Received Data | 3 _____                    | 2 Trans Data    |
| RTS           | 4 _____                    | 4 RTS           |
| CTS           | 5 <input type="checkbox"/> | 5 CTS           |
| DSR           | 6 _____                    | 6 DSR           |
| DCD           | 8 _____                    | 8 DCD           |
| DTR           | 20 _____                   | 20 DTR          |

Figure 1: Pin connections for null modem adapter.

where the file will reside and *filename.ext* is the name and extension that the uploaded file will be given on the disk.

3. Press F3 on the 100. **File to Upload** will appear on your screen. Enter the name of the file that will be uploaded. For example, *ADRS.DO*

4. After entering the filename, **Width:** will appear on the 100's screen. It's looking for line width. Enter 80. This is a good general value. The Up prompt above F3 will turn to reverse video and uploading will begin.

5. Again, that's all there is to it. After

a delay of several seconds, the Up prompt will return to normal video. Then, the PC's disk drive will begin as before. Only this time the 100 will not display data while uploading it.

When it's finished, the MS-DOS message **1 File(s) copied** will be on the 100's screen followed by **A>** on a new line.

The new file will be on the PC's disk. To check, type *DIR d:* where *d* is the drive containing the disk with the uploaded file. You can do all this while the 100 is still hooked up as the MS-DOS console. □

COM CP/M from page 11

2. Bring up the public domain MODEM7 series program on the CP/M computer.

**A> MDMXXXX**

3. Set the bits per second (bps) rate at the MODEM7 COMMAND prompt to 1200.

**A>>COMMAND: SET**  
**Input bps Rate (300, 1200, etc.): 1200**

You can use slower or faster bps rates, but 1200 has worked fine for me.

4. Again, at the MODEM7 COMMAND prompt, enter Terminal Mode in the following manner:

**A>>COMMAND: T FILENAME.EXT**  
**\*\*\*Memory buffer available\*\*\***

FILENAME.EXT is the name and extension you wish to give the file you'll be transferring from the Model 100 to the CP/M computer.

5. Now open MODEM7's memory buffer by typing:

**^Y**  
**\*\*\*Memory buffer open\*\*\***

The semicolon at the left of the CP/M's screen indicates that the text you see on the screen is being stored in the memory buffer and can later be read to disk.

6. On your Model 100, place the widebar cursor over the name of the text or BASIC file you want to transfer, then hit Enter. If transferring a BASIC program, you must first press Shift-Break (or ^C) to stop program execution before sending it to your CP/M computer. When transferring a text file, Shift-Break is not necessary.

7. On the Model 100, press F3. The words **Save to:** will appear at the bottom of your screen.

**SAVE TO: COM:58N1E**

This "saves" (sends) the file to the COMMunications (RS-232) port. The numbers and letters after COM: set the communications parameters — bps



rate, word length, parity, stop bit and line status (XON/XOFF) — to match those on your CP/M computer's MODEM7 program.

8. You'll see your Model 100 file scroll on the CP/M's screen. When it stops, exit Terminal Mode at the CP/M computer and write the text in the memory buffer to disk.

^E

A>>COMMAND WRT

The stored text will now be written to disk under the file name you created in Step 4.

9. Again at the COMMAND prompt, type *DIR* to view the directory of the disk. You should see the new file listed.

You should be aware that the 40 column text created on the Model 100 automatically "word wraps" unless you press Enter at the end of each line. Pressing Enter puts a carriage return (CR) and line feed (LF) at that point in your text. Without them, text appears as a single, long line when you bring the file up in WordStar. To reformat, set the left and right margins in WordStar, place the cursor at the head of the section to format and type ^B.

## AND BACK AGAIN

Transferring files from a CP/M computer to the Model 100 is similar, but in reverse. One note before getting into that, however. WordStar files created using the document mode contain numerous *hi-bit flags* such as non-printable control characters or characters with eighth bit sets. Chances are, you'll have problems if using the following instructions to transfer such files to your 100. To avoid them, make a copy of the file with the eighth bit set to zero by using the CP/M PIP.COM program as follows:

A> PIP NEWFILE.EXT = OLD-FILE.EXT [Z]

Files created in non-document mode can be transferred without performing this preliminary step.

1. Connect the computer's RS-232 ports using a null modem cable.
2. Bring up the MODEM7 program on the CP/M computer.
3. Set the bps rate at the MODEM7 COMMAND prompt to 1200.
4. List the directory of the current drive by typing *DIR*. Select the file you want to transfer and remember its name.

### bps Rate

- M 300 bps (bps)
- 1 75 bps
- 2 110 bps
- 3 300 bps
- 4 600 bps
- 5 1200 bps
- 6 2400 bps
- 7 4800 bps
- 8 9600 bps
- 9 19200 bps

### Word Length

- 6 6 bits
- 7 7 bits
- 8 8 bits

### Parity

- I Ignore parity
- O Odd parity
- E Even parity
- N No parity

### Stop Bit

- 1 1 stop bit
- 2 2 stop bits

### Line Status

- E Enable
- D Disable

Figure 1: Model 100 communication parameters.

5. Next, enter Terminal Mode at the COMMAND prompt:

A>>COMMAND: T

6. On your Model 100, use the arrow keys to place the cursor over TEXT (if transferring a text file) or BASIC (if transferring a program) and hit Enter. If you choose TEXT, you'll be prompted for a file name. Type in the six-character name of the file you'll be transferring from the CP/M computer (the .DO extension isn't necessary). If you entered BASIC, no file name is required at this time.

7. On the Model 100, press F2. You'll be prompted **Load from:**. Type in *COM:58N1E*. This loads the data which will be coming in from the communications (RS-232) port.

8. At the CP/M computer, send the file from terminal mode by typing ^T. Then proceed as follows:

File name to send (RET to quit):  
FILENAME.EXT

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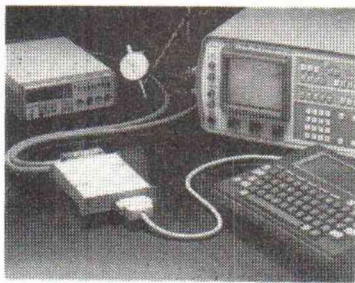


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## COM

Do you want delays (Y/N):

N

If the file you transfer seems loaded with errors, try answering Y to the last question.

9. As the file moves across, text will scroll on the CP/M's screen, but not the 100's. When it's finished, you'll be prompted **Transfer Completed**. Next hit Shift-Break on your 100. If transferring a text file, it will be displayed. If it's a program you'll get an IO error

and then an OK prompt. Disregard the error message.

10. To save a text file, hit F8 just as you would to end a normal editing session. If you've transferred a BASIC program, list and run it. If it's okay, save by hitting F3 and typing in the file name. □

*Ken Haller is a researcher-writer of technically oriented material. He uses his computers as tools to perform his job more efficiently, but is by no means an expert.*

## COM MAC from page 11

and line feeds and need codes for end of paragraph, open quotes, close quotes, etc.

One big problem was that if you keyed in a story with typesetting codes, it was impossible to get readable hard copy from the Model 100. I needed a print-out in the office to pass around among editors for necessary suggestions or changes. But all those strange codes messed up my printer. The solution was to leave out the codes, make my print-outs and write a program that would automatically insert and substitute the correct codes.

The program in Listing 1 does just that. It's slow but it's perfect for 300 bits per second (bps). It examines each character of the story and, if necessary, replaces it with a compatible typesetting code.

Into this idyllic situation came hard reality — a newspaper needs more than one story, it needs many. One column equals about 24 kilobytes (K), but no way is it a newspaper's worth. After one year it was clear we needed a desk-top hard disk system.

I won't bore you with the story of my computer shopping. Big Blue was alluring. Almost everyone was thoroughly unhelpful. But eventually I decided on a Macintosh XL.

Again it was love at first sight. Mac was as friendly in its own way as my Model 100. The only problem was getting the two to talk to each other. Was it too much to expect my two loves to communicate? I tried several expensive communications programs. No go. Just a cold, silent chill.

Then one day I attended a user's group meeting and for eight dollars picked up a program called Red Ryder. This is a user supported program that you can try out first. If you like it, send the company \$40 to register. They call it the "Mac Honor" system. You can get a copy by writing The Freesoft Company, 10828 Lacklink, St. Louis, MO 63114, (314) 428-8057.

This program allows the Model 100 to take control of the Mac very easily.

With my previous success in writing a BASIC program, I quickly wrote a program for the Model 100 that allowed uploading and downloading from the Mac's hard disk. (Listing 2).

The system works simply. Connect the Mac modem port to the Model 100 RS232 port using a null modem cable. The Mac XL uses a regular RS232 cable. For the regular Macintosh, you'll need a cable from an Apple dealer.

Run the BASIC program on the 100 and Red Ryder on the Mac. The 100

Listing 1: Program for inserting typesetting codes.

```

10  SOUND ON:DEFINT B,Q,N,C:B1=0:N=1:Q=1
20  CLS:MAXFILES=2
25  ONERRORGOTO 310
30  CLS:FILES
40  B1=B1+1:INPUT"File to send";FS(B1) 'get a list of .do files to send
50  IFF$(B1)<>" "THEN40ELSECLS:GOSUB1000
110 FORB2=1TO(B1-1)
120  FS=FS(B2):GOSUB2000 'send each file
130  NEXTB2
200  CLOSE:CALL21179:MENU 'all done
  
```



```

310 IF ERR=52 THEN 350
320 IF ERR=54 THEN RESUME 2290 ' end of a file, send a control code
330 IF ERR=55 THEN 350
340 PRINT "ERROR"ERR"AT LINE"ERL:END
350 CLOSE2:RESUME2330
1000 CLS:PRINT:PRINT "Dialing ";
1045 PH$="1234567<> 'the phone number
1060 M=VARPTR(PH$)
1070 AD=PEEK(M+1)+(PEEK(M+2)256)
1080 CALL 21200
1090 CALL 21293,0,AD
1130 OPEN"MDM:8N1D"FOROUTPUTAS 1 ' set parameters to match
      typesetter's
1200 RETURN
2000 OPENF$FORINPUTAS 2
2100 C=0:Q=1:N=1
2200 BEEP:CLS
2210 ' the next line is the initial sequence required by the typesetter
2220 PRINT #1,CHR$(5);CHR$(3);"tag:";F$;"source:";ID NUMBER";";
2230 D$=INPUT$(1,2):PRINTD$;IFASC(D$)>127THEN2255 ' any thing
higher      causes this particular typesetter to crash!
2231 IF D$<>CHR$(34)THEN2236 ' substitute the open and close quote
      codes
2232 IF Q=1 THEN D$="":Q=2:N=1 ELSE D$="":Q=1
2233 GOTO2260
2236 IFD$<>" THEN2238 ' substitute the single quotes
2237 IFN=1THEN D$="":GOTO2260ELSE2260
2238 IFD$=" THENN=1:GOTO2260 ELSE N=0
2239 IFD$=" THENEND$="(EM:)" :GOTO2260
2240 IFD$<>CHR$(13) THEN 2260 ' substitute the 'end paragraph' code
2250 PRINTCHR$(10):D$=INPUT$(1,2):D$="(ep)":Q=1:GOTO2260
2255 IFD$="( THENEND$=CHR$(17) ELSEIFD$=" THEN D$=CHR$(19)
      ELSEIFD$="< THENEND$=CHR$(20)ELSE2230 ' switching to and from
      italic, bold and      italic bold
2260 PRINT #1,D$; ' send it
2270 C=C+1:IFC>149THENBEEP:C=0
2280 GOTO2230
2290 PRINT #1,CHR$(5)CHR$(3); ' code to tell typesetter to file story
2300 CLOSE(2):BEEP:BEEP:BEEP:BEEP:BEEP
2330 RETURN

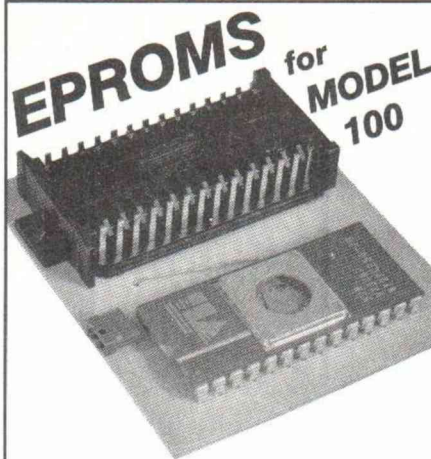
```

Listing 2: Program for up- and downloading to a Macintosh hard disk.

```

10 SOUND ON:DEFINT B,Q,N,C:B1=0:N=1:Q=1
20 CLS:MAXFILES=3
25 ONERRORGOTO310
26 PRINT"Do you want to download a file"
27 A$=INKEY$:IFA$="" THEN27
28 IFA$="y"ORAF$="Y" THEN30ELSE3000
30 'CLS:FILES:PRINT"MAC: 2400-N-8-2 half HOST, STRIP controls"
31 B1=B1+1:INPUT"File to send to MAC ";F$(B1)
32 IFF$(B1)<>" THEN31ELSECLS
35 OPEN"com:68n1e"FOROUTPUTAS1

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reminds you what parameters to set Red Ryder to by clicking on the status bar. Choose the host mode from the Mode Menu. I usually choose to strip control characters as well.

Downloading to the Mac is simple. Type in the list of .DO files to download and hit an extra Return. That's it. The Model 100 files are automatically stored on the Mac's disk as "text files" (plain ASCII) which can be opened by MacWrite, Microsoft Word, etc.

Downloading from the Mac is similar except for two points. First you must know what text format files are in the Mac. Asking for one that's not there will generate an error message and you'll have to start again.

Second, the Model 100 has no way of knowing when the transfer is done. You have to hit Shift/Break to end the transfer manually. You may type Run to get another or Menu to finish up.

So now I have the best of both worlds. One love to take about town with me, to libraries, events and dinner parties. The other waits faithfully at home for our return, ready to chatter away with us about our day.

If only the rest of life could work out so well. ☐

```

150  FORB2=1TO(B1-1)
155  F$=F$(B2):GOSUB2000
300  forzz=1to1000:nextzz:NEXTB2
305  PRINT#1,"That's all folks".beep:beep:beep:MENU
310  IF ERR=52 THEN 350
320  IF ERR=54 THEN RESUME 2300
330  IF ERR=55 THEN 350
340  PRINT "ERROR"ERR"AT LINE"ERL:END
350  CLOSE2:RESUME2330
2000  FOR zz=1TO400:NEXTzz
2001  OPENF$FORINPUTAS 2
2100  PRINT#1,CHR$(13);"RECA "F$:CHR$(13);
2204  CLS:PRINT@45,"Downloading ";F$
2230  D$=INPUT$(1,2)
2240  PRINT#1,D$;:GOTO2230
2300  CLOSE(2):PRINT#1,CHR$(13);"CLOSE";CHR$(13):BEEP
2330  RETURN
3000  OPEN"com:68nte"FORINPUTAS1
3100  OPEN"com:68nte"FOROUTPUTAS2
3150  CLS:PRINT"MAC: 2400-N-8-2 half HOST STRIP SEND LF"
3200  INPUT"what file do you want to fetch":F$
3300  OPEN LEFT$(F$,6) FOR OUTPUT AS 3
3400  PRINT#2,"SENDA "F$
3500  C$=INPUT$(1,1)
3600  PRINT#3,C$;:GOTO3500

```

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vorite users were gone (there's been no sign of Dragonfly or The Leviathan for a couple of months now) but there are plenty of new users. I've become an old-timer.

I've received private messages from many of the users, and I've come up with a composite picture of a BBS addict. Most of The Absurd's users are college students at the University of Wisconsin. They're brighter than most students, I think, but less social.

A sense of loneliness pervades the private messages. The users don't get a lot of human contact in their day-to-day lives. They count on The Absurd for friendship and companionship.

I suggested as much in a public message, and sparked a series of thoughtful messages:

To: ANYONE  
From: JIM ALLEN  
Subject: This is progress?

I first logged onto BBS's about 15 months ago. I cut my teeth with some questions about surge protection: "Is it important? How long have you gotten by without it? Has anyone had bad experiences without it? Can you recommend a

brand?"  
The results were a mixed bag. Six, maybe 9 people responded, but few took the time to be helpful. Most merely said things like, "You bet it's important!" They didn't relate anything about their own experiences. One guy steered me to

**If a choice is  
there, human  
contact is  
preferable.**

an article in BYTE that proved very helpful.

Then I logged onto the Absurd. There was "Lord" this and "Sir" that, "Master" so-and-so. A lot of power names. A lot of insults flying back and forth. And why were women so under-represented? Wouldn't they love the chance to converse without being rated on the basis of what they look like?

Something was wrong. This could hardly be the ideal medium if everyone

felt the need to hide behind pseudonyms. Instead of fulfilling their potential, BBS's seem to be places where we are at our very worst toward one another.

Am I the only one who is disappointed?

To: J.D. HILDEBRAND  
From: AKA WANDERER  
Subject: The future

I disagree with your theory that people might eventually be content with the written comments available on a network communications system.

The basic most fundamental need of human beings (and other species of high evolutionary levels) is the need to touch, be touched and discern touch from those of their own kind. Many examples abound.

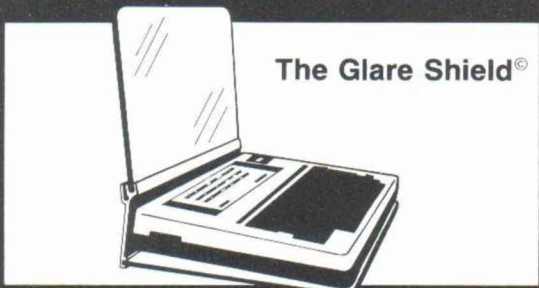
The society of boarders (at least in this area) are not the nurturing loving, involved folk that would cause people to want to spend their lives communicating solely with them.

I'm not saying these boards are frivolous — but neither do I think they portend the future.

AKA

To: AKA WANDERER  
From: J.D. HILDEBRAND

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Subject: Yes and no

Thanks for the critique. I agree about our need to be touched. My point is, with urbanization and over-crowding, traditional touching becomes risky and costly. Downright impractical for most, impossible for some.

Physical touching is just an approximation of what we really need. Is it unreasonable to predict that, given an impersonal environment, a minority might find a way to maintain human contact electronically?

I don't think so.

Jim Allen points out quite rightly that "touching" isn't the main reason behind most of the messages here. Quite so. But look at where and how most of you live: in a college atmosphere with plenty of opportunities for face-to-face "touching."

I'd bet anything that a majority of the Absurd's legions are loners who watch the touching but don't partake much. And now and then someone leaves a message here that's brimming with pathos.

J.D. the Genderless  
Lobster Land, USA

To: J.D. HILDEBRAND  
From: AKA WANDERER

Subject: My chief objection. . .

. . .to these boards is the frustration encountered by a lack of visual stimuli. I've been accused by several as lacking humor about situations and being sarcastic and unkind when no intent was meant that way.

In real life one can pick up visual clues as to what is really meant in a situation, but that's lacking on the boards. A simple poke in fun can be misinterpreted as a cruel jab.

If a choice is there I think human contact is desirable (there are just too many things one can't do over a modem) and will be chosen. A sterile closed-circuit environment would never work for any length of time.

Blatantly prejudiced—  
AKA

To: MAD MAX  
From: JIM ALLEN  
Subject: Anonymity Reconsidered

I think you're right about the value of anonymity. It serves to heighten equality and disarm prejudice. I also think that the boards, which hold so much promise for communication, are in fact bringing out the worst in us. Maybe I'm wrong in

blaming anonymity. But when BBS people get together face-to-face, they are not nearly so critical of each other as they are on the boards. They cease twisting each other's arguments around, and stop condescending to each other so blatantly. Why is it that BBS communication is so heavily laced with hostility?

I think the attraction is power. You don't know who I am, so I can say what I like. Or maybe for you the pseudonym is a benign adornment, like jewelry, that serves only to make life more colorful. I'm skeptical.

It's safe to say that everyone spends some amount of time re-playing in his head events that he wishes he'd handled differently. When I'm writing a message, I can make up for all those times in real life that I couldn't think of the clever comeback.

I'd be interested to hear from more of you. The question is, why do you really use a pseudonym?

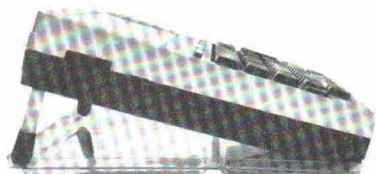
To: AKA WANDERER  
From: J.D. HILDEBRAND  
Subject: point granted

You may be right. Modem-to-modem communication is probably less desirable

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than direct flesh-to-flesh for most humans. And for many, the chance of miscommunication is probably greater in written than in spoken English.

I may be atypical. A writer by vocation, avocation and (I suspect) birth, I am far more comfortable with the written word than mouth-to-mouth. If I need to communicate something important and I want to ensure it won't be misunderstood, I write it. I'm confident that I can express my thoughts in this relatively controlled medium. Face-to-face, I'm never sure if someone is agreeing with me just because of the way my jeans fit . . . right?

Overcrowding inevitably breeds depersonalization. Overcrowding is our future as a species (the alternatives are pipe dreams and nightmares). Boards like this one may afford people a rare opportunity to share thoughts and ideas. These modems and screens may become increasingly important SOCIAL (not technological) forces.

J.D. the Genderless  
Lobster Land, USA

To: J.D. HILDEBRAND  
From: WET WAX

Subject: Atomization

The process by which you experience loneliness amidst a sea of humanity is known as "atomization." The family molecule is being reduced to its component atoms. Our modern day society,

**The  
community  
exists as a  
pattern of on  
and off bits.**

already a source of immense apprehension to sociologists of the 50s, is a mass of individual atoms, none related to each other.

## LIVING ONLINE

I maintain frequent contact with the sysop, both in CHAT mode and via private messages to one of his alter egos on the BBS. The Absurd has re-

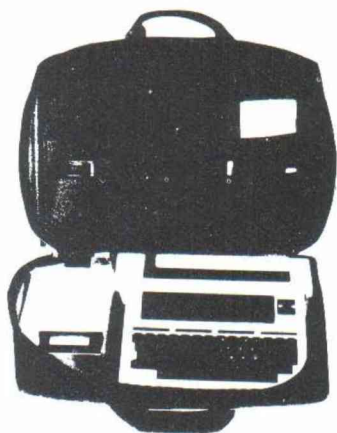
quired a nightly house-cleaning commitment since he set it up almost two and a half years ago. "It's one of the three oldest boards in Madison," he confided to me. "The average half-life for a BBS seems to be about four months."

Though he has god-like powers over the message base, the operator doesn't edit the messages, or even comment on them unless coaxed. I suspect my diatribes are more serious than he'd like — he named his BBS "The Absurd," after all.

He admits that running the board has changed him. It's served as a human connection that many hackers lack. He's met a lot of people electronically — and occasionally in the flesh — he would otherwise probably never know.

And if the knowledge he's gained about gerbil ranching hasn't made him rich, at least he's found an enjoyable way to spend the evenings.

For more information about private bulletin boards and online communities, check out *The Modem Journal*, published by Sam Ezust, P.O. Box 503, Cambridge, MA 02238. Include \$5 for a six-issue subscription. □



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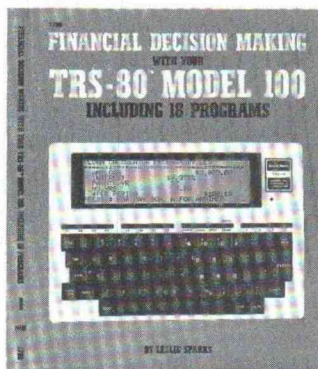
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Circle 66 on Reader Service Card



# Ring Detection

The built-in Model 100 modem can be oh, so frustrating: It's auto-dial, but not auto-answer. So, kiss your Model 100-based bulletin board system (BBS) goodbye.

Well, no, according to Portable 100 contributing editor Carl Oppedahl. True, the system doesn't currently acknowledge the telephone ring signal but that's easy to fix. You can build your own ring-detect cable simply and easily.

## HE EXPLAINS

Pin eight of the PHONE connector on the back of the Model 100 is designated as "RP" — Ring Pulse. Grounding that pin (to pin two) sets bit five of input port 216 to binary zero. The normal status of bit five is binary one.

Using the BASIC INP() function, the status of that important bit can be tested — and that knowledge acted upon. Try this simple BASIC program: 1 IF (INP(216) AND 32) = 0 THEN BEEP:GOTO 1 ELSE GOTO 1.

While this program is running, ground pin eight of the PHONE jack to pin two with a paper clip or a piece of wire. As long as the pin is grounded, the 100's speaker will beep.

Now we have an on/off port that can be tested under program control. The next step: teaching the telephone to ground pin eight when the phone's ringing.

## GOLD RING

Three voltage levels are used by the telephone system, according to Oppedahl. When the telephone's on-hook, the stand-by voltage is 40 volts AC. Telephone ring pulses reach 86 VAC. During actual phone use, the line carries only 10 volts.

Figure 1 contains the schematic for the circuitry that grounds pin eight during the 86-volt ring pulses. Table 1 lists the parts required. After construction, attach the four leads to the four plugs indicated: 2, 3, 7 and 8.

To use the auto-answer system, the DIR/ACP switch should be set to DIR and the ANS/ORIG switch should be set on ANS.

Figure 1: Ring-detect cable schematic

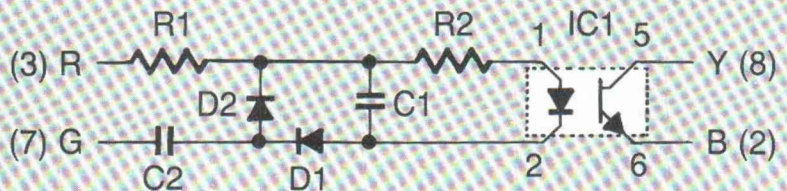


Table 1: Components for ring-detect circuit

| Radio Shack Reference | Description           | Catalog  |
|-----------------------|-----------------------|----------|
| C1,C2                 | 0.1 uF 250V capacitor | 272-1053 |
| D1,D2                 | 1A 400V diode         | 276-1103 |
| IC1                   | Optoisolator          | 276-1654 |
| R1                    | 2.2K resistor         | 271-027  |
| R2                    | 10K resistor          | 271-034  |

The detect rings, set a loop that checks the RP signal — bit five of input port 216, as above. After a ring is found, go off-hook and look for a carrier, perhaps it's a wrong number.

Once there's a carrier, open the modem as both an input and output file. When bit 0 of port 208 goes to ground, the signal's broken and it's time to hang up. □

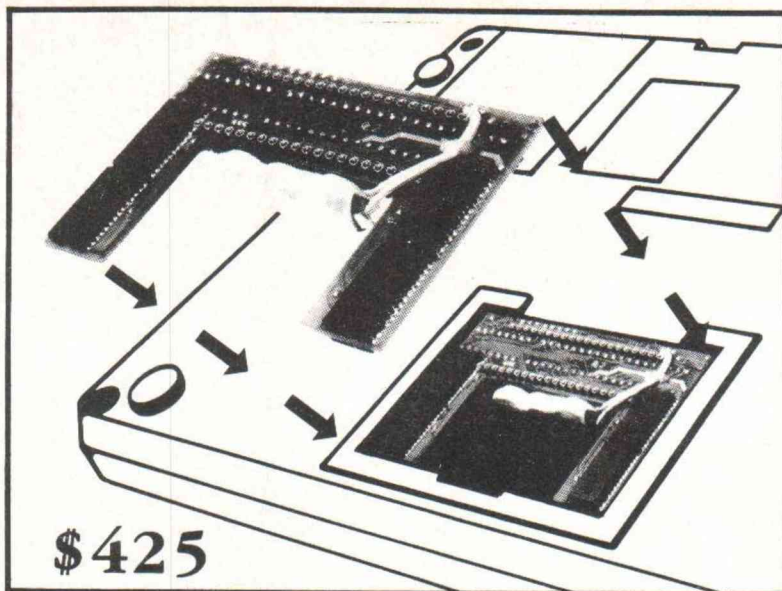


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You then have 4 banks of RAM of 32K each. The additional three banks also work just like your Main Menu.

You push a function key and you are in the second bank. Push again and you are in third, again, then fourth. Press it once again for your original bank.

It has its own built-in NiCad battery that recharges right from the Model 100 and its guaranteed for a full year.

What is really great is that you can copy a file from one bank to another with just a function key.

Each bank is like having another Model 100, and all the built-in programs as well as any snap-in ROM programs appear in all four banks and work the same way. Your widebar cursor moves from file to file and you access any file or run any program just by pressing ENTER.

What lets you copy any file from one bank to another is a snap-in ROM from PCSG called RAM+, that comes at no extra charge. It just pushes right into the little socket in that same compartment with the 96K expansion unit.

Not only does this firmware let you copy a file from bank to bank, but you can make a copy of any file within the same bank instantly with a function key. Great for Lucid spreadsheets!

### **Copy a file from bank to bank with a function key**

You can also rename a file, or kill any file with just a function key. Plus you can do a whole lot of other useful things like setting the date, day and time with function key ease. You even have a function key that lets you use non-Radio Shack printers without having to make those tricky dipswitch settings.

RAM+ lets you cold start any one of your banks without affecting the other three. That means that anytime you want you can clean out a bank's entire memory, but leave intact all the files in the other banks.

What is also fantastic is that you don't have to have the ROM in place to use the additional RAM. Whenever you take out the snap-in ROM it leaves behind a tiny machine code program that lets you switch from bank to bank just by pressing ENTER.

This lets you use your ROM socket to snap-in other ROMs like LUCID spreadsheet, WRITE ROM text processor, or DISK+ ROM file transfer program, and use them in any or all four banks. All of these, by the way, are available from PCSG.

When you are ready to copy a file from one bank to another or use any of the other fantastic functions we talked about you can just snap the RAM+ ROM back into place.

Everybody that has this 128K system in their Model 100 is so excited, because it gives them four times the capacity and all banks work just like the Main Menu.

And what has made a lot of people happy is that the system bus, located in the same compartment, is left free for you to plug in a DVI or the Holmes Engineering/PCSG portable disk drive.

The ability to copy a file from bank to bank instantly with a function key, plus all of the other features make this RAM extension truly an engineering masterpiece.

Some people hesitate when they think of installing something, and then others are skeptical that any additional hardware could be as good as the Model 100 itself. That's why we sell these 96K expansions on a 30 day trial. Simply return it within 30 days for a full refund if you are not satisfied. Priced at \$425. MC VISA COD.

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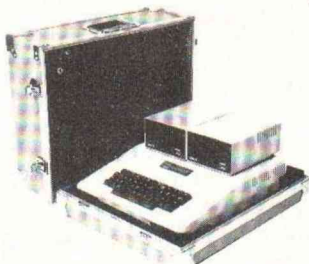
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# HEX

# Covering the Bases

*A quick and easy binary to decimal  
to hexadecimal converter program.*

By Alan L. Zeichick

Programmers and numbers are like donuts and coffee. They go well together — not just the ordinary counting numbers like 1, 2 and 3, but also the special numbering systems used by computers and their masters.

As nearly every schoolchild knows, computers work with ones and zeros — ons and offs — 1 and 0. These correspond to the values of individual segments, or *bits* of memory. Those two simple values, 1 and 0, are used everywhere throughout a digital computer, singly and in combination, for programs and data. This two-valued numbering system is called *binary* or *base 2*.

Humans, on the other hand, use *decimal* or *base 10* numbers — 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. We find decimal numbers like 105 more convenient to deal with than the binary equivalent, 1101001, even when working with the binary information within a computer.

Sometimes, though, binary num-

bers must be used, such when working with character-conversions or other technical applications. A short-cut format called *hexadecimal* or *base 16* comes in handy. Hex, as it's often referred to, has 16 possible digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E and F — A refers to the decimal value 10, B is 11 and so-forth.

Hex and binary have a close relationship. Every four binary values corresponds to one hex digit, as seen in Table One. So, the binary number 11010111 can be broken down to two groups of four — 1101 and 0111 — which correspond to D7 in hexadecimal. That's also 215 in the decimal system.

## AUTO CONVERSION

The BDH.BA program automates the process of converting numbers between the three bases — binary, decimal and hex. The *input base* at the top

Listing 1: The BDH.BA program.

```

100 '
105 ' Hex - Binary - Decimal Converter
110 ' Alan L. Zeichick for Portable 100
115 ' BDH.BA -- December 10, 1985
120 '
125 ' Set up the system
130 '
135 GOSUB 335
140 '
145 ' Set up the display
150 '
155 GOSUB 430
160 '
165 ' Get the input string
170 '
175 LK$ = LEFT$(CK$, BS(ST))
180 PRINT @ 15, ST$(ST); CHR$(27); "K";
185 '
190 PRINT @ 95, CHR$(27); "K";
195 IN$ = ""
200 X$ = INKEY$
205 IF X$ = "" THEN 200
210 IF X$ = CHR$(27) THEN ST = (ST + 1) MOD 3
    :GOTO 175
215 IF X$ = CHR$(13) THEN 240
220 IF X$ >= "a" THEN X$ = CHR$(ASC(X$) - 32)

```



```

225 IF INSTR(LK$, X$) <> 0 THEN PRINT X$;
      :IN$ = IN$ + X$
      :IF LEN(IN$) > 21 THEN 240
230 GOTO 200
235 '
240 IF IN$ = "" THEN MENU
245 IF ST = 1 THEN DC = VAL(IN$) ELSE B = BS(ST)
      :GOSUB 570
250 IF DC < 1E+14 THEN DC$ = STR$(DC) ELSE DC$ = "
      Overflow"
      :DC = -1
255 '
260 B = 2
265 GOSUB 485
270 PRINT @ 135, OP$; " b"; CHR$(27); "k";
275 PRINT @ 174, DC$; " d"; CHR$(27); "k";
280 B = 16
285 GOSUB 485
290 PRINT @ 215, OP$; " h"; CHR$(27); "k";
295 GOTO 190
300 '
305 ' =====
310 ' ===== SUBROUTINES =====
315 ' =====
320 '
325 ' Initialize variables
330 '
335 DEFDBL A-Z
340 DIM VAS(16), ST$(3), BS(3)
345 '
350 FOR CT = 0 TO 15
355   READ VAS(CT)
360   NEXT CT
365 DATA 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D,
      E, F
370 '
375 FOR CT = 0 TO 2
380   READ ST$(CT), BS(CT)
385   NEXT CT
390 DATA BINARY, 2, DECIMAL, 10, HEXADECIMAL, 16
395 '
400 CK$ = "0123456789ABCDEF"
405 ST = 0
410 RETURN
415 '
420 ' Set up the screen
425 '
430 CLS
435 PRINT @ 0, CHR$(27); "pInput Base: "
440 PRINT @ 80, "Input Value:"
445 PRINT @ 120, "Binary: "
450 PRINT @ 160, "Decimal: "
455 PRINT @ 200, "Hexadecimal:"; CHR$(27); "q"
460 PRINT @ 282, "Esc - Change Input Base Null -
      Exit";
465 RETURN
470 '
475 ' Convert from decimal
480 '
485 IF DC = 0 THEN OP$ = "0"
      :RETURN
490 IF DC = -1 THEN OP$ = "Overflow"
      :RETURN
495 WK = DC
500 MAG = INT (LOG(WK) / LOG (B))
505 OP$ = ""
510 '
515 FOR CT = MAG TO 0 STEP -1
520   TM = INT (WK / (B ^ CT))
525   OP$ = OP$ + VAS(TM)
530   WK = WK - TM * B ^ CT
535   NEXT CT
540 '
545 IF LEN(OP$) > 22 THEN OP$ = "Overflow"
550 RETURN
555 '
560 ' Convert to decimal
565 '
570 DC = 0
575 '
580 FOR CT = 1 TO LEN(IN$)
585   DC = DC * B + INSTR(CK$, MID$(IN$, CT, 1)) - 1
590   NEXT CT
595 '
600 RETURN

```

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Every reader has unique needs. Some seek guidance from reviews of software and peripherals. Others look to a magazine to provide tips to increase their programming proficiency. Accounts of innovative applications attract a big audience, as do articles about other users who find creative ways to use their systems.

You can help tailor **Portable 100/200/600** to your unique needs by rating the articles that appeared in this issue. Just circle the numbers indicated below on the Reader Service Card at left. Rate all the articles, some of them or just one. Then detach the card and drop it into the mail — we pay the postage.

The editors will analyze your feedback and respond by commissioning more articles of the most popular types — and fewer of the losers.

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## HEX

| Binary | Decimal | Hexadecimal |
|--------|---------|-------------|
| 0000   | 0       | 0           |
| 0001   | 1       | 1           |
| 0010   | 2       | 2           |
| 0011   | 3       | 3           |
| 0100   | 4       | 4           |
| 0101   | 5       | 5           |
| 0110   | 6       | 6           |
| 0111   | 7       | 7           |
| 1000   | 8       | 8           |
| 1001   | 9       | 9           |
| 1010   | 10      | A           |
| 1011   | 11      | B           |
| 1100   | 12      | C           |
| 1101   | 13      | D           |
| 1110   | 14      | E           |
| 1111   | 15      | F           |

Table 1: The first 16 values in all three bases.

of the display shows the base to be converted from. This can be rotated between the three systems by depressing the Escape key.

After the right base is selected, enter the proper number and press Enter. The numeric equivalent in all three bases will be displayed below. When entering numbers, BDH.BA only accepts valid digit combinations: 0 and 1 for binary, 0 through 9 for decimal and 0 through F for hexadecimal. If a mistake is made while typing, convert the erroneous number and start over.

To return to the main menu, press Enter without keying an input value.

## ROUTINES GALORE

BDH.BA contains a few interesting subroutines suitable for including in other programs:

The code between lines 195 and 230 limits the input value to a predetermined set of characters, stored in the variable LK\$. By using this code, a program's keyboard can be limited to only upper-case characters, numbers or whatever's desire.

The subroutine at lines 485 through 550 converts numbers from the decimal (base 10) system to any other base. For input values, the variable DC is the decimal equivalent, B is the desired base and the array VA\$ must have been defined as in lines 350-365. The converted value is found in the string variable OP\$.

Similarly, the subroutine between lines 570 converts number to decimal from any base. The input value is in the string IN\$, B represents the input's base and the variable CK\$ must have been defined as in line 400. The decimal value calculated can be found in the variable DC. □



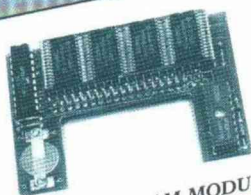
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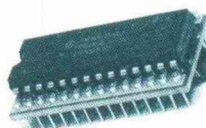
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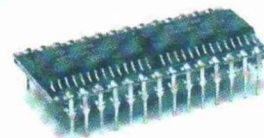
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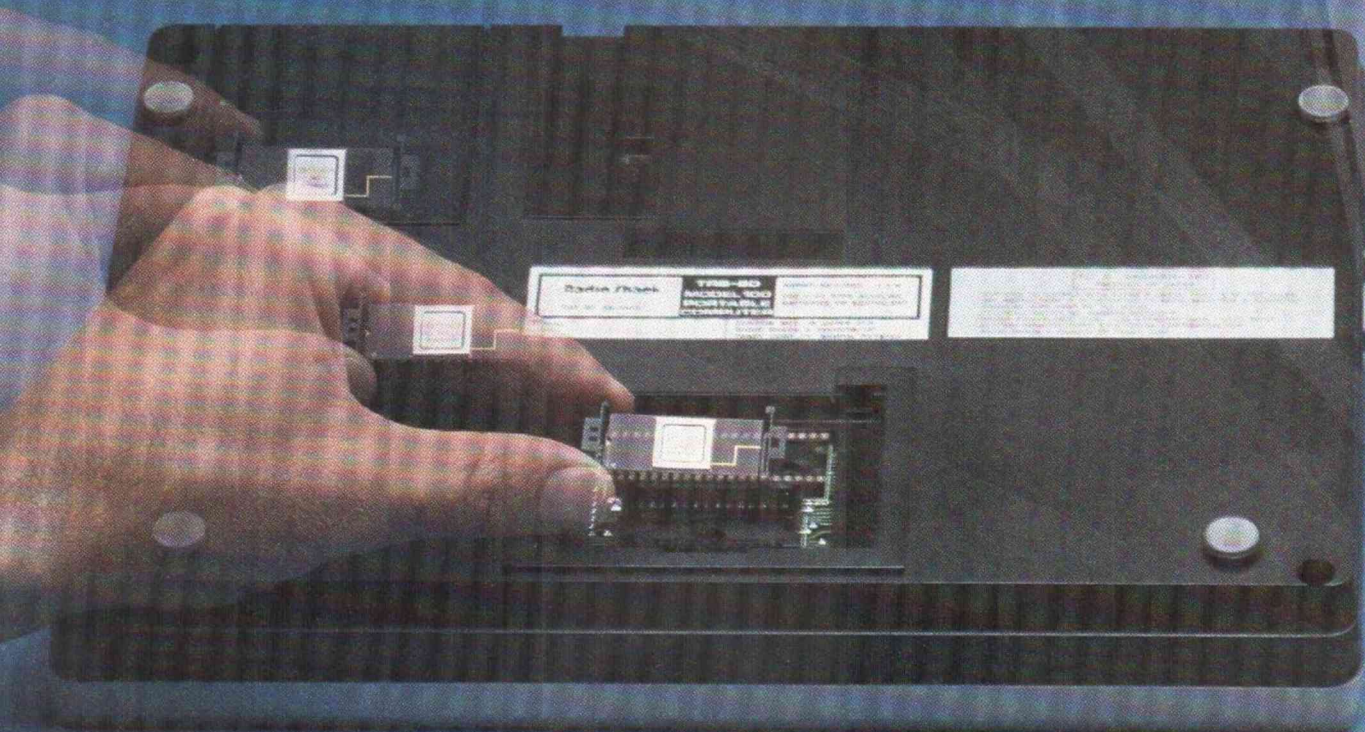
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# IF YOU'RE MISSING THIS, Add Multiplan or Interactive Solutions to

If you own a Model 100, then you already know. You know that the Model 100 comes with five built-in management programs. You know about the full-size typewriter-style keyboard and the direct-connect modem and telephone auto-dialer. But did you know how easy it is to boost your portable's power with Multiplan or Interactive Solutions?

You're really missing out if you don't know how easy it is to supercharge your Model 100. Just turn your machine over, pop in either of these high-performance ROM mod-

thing from complex spreadsheet analysis and calculations to sales forecasts, profit-and-loss projections, budgeting, pricing, engineering calculations and much more.

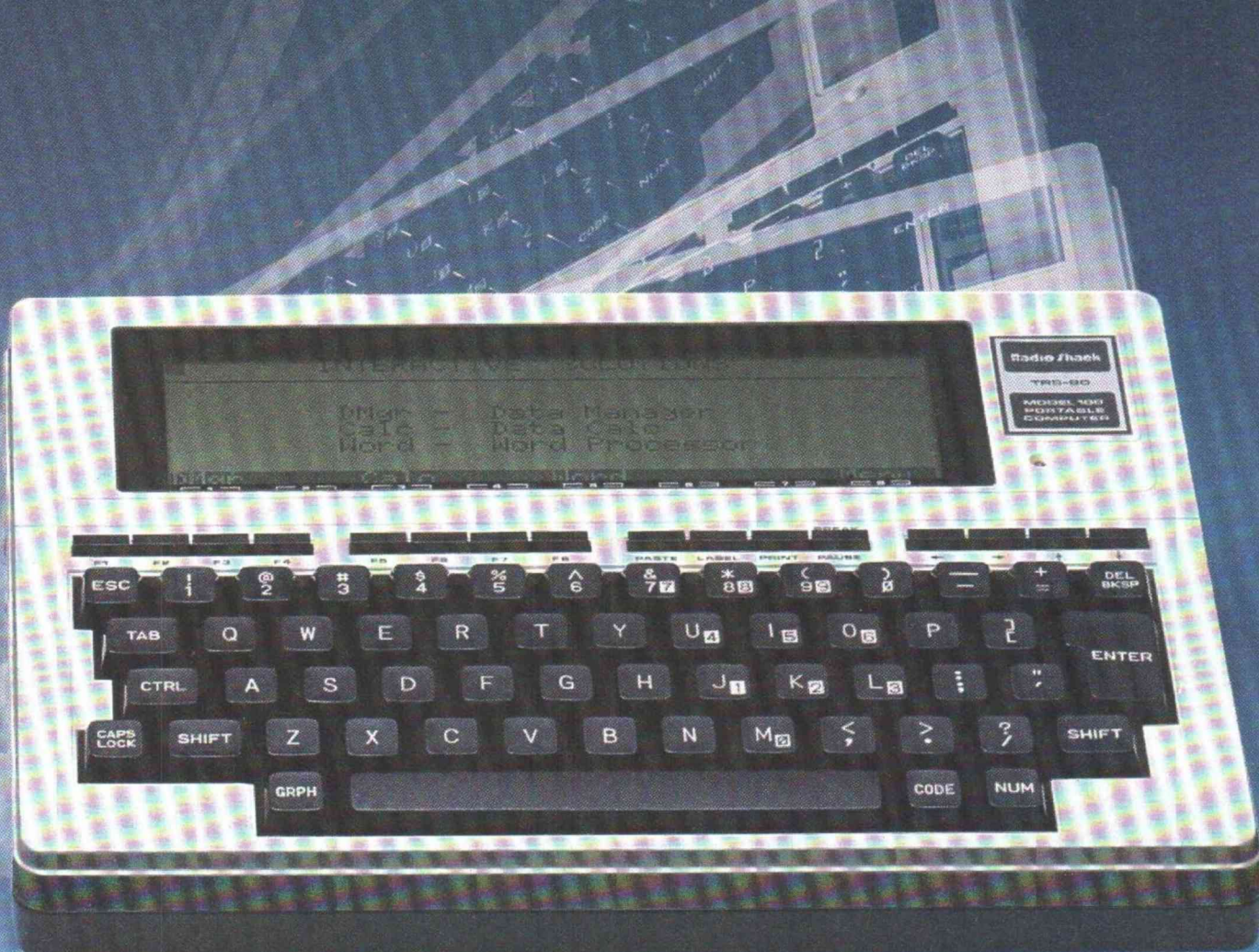
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Interactive Solutions (26-3844, \$149.95) is a three-in-one cross-referencing software package with database management, spreadsheet analysis, and word processing.

Because Interactive Solutions is a ROM add-on, it increases the amount of memory that can be utilized by your Model 100. In addition, you can save data on cassette instead of using valuable RAM memory.

Information stored in Data Manager, the data base, can be utilized by Data Calc, the

Word Processor allows you to merge Data Manager information into your text. Or you can select any part of a Data Calc worksheet and add it to any text file in Word Processor.

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# Well Entrenched

**M**icrocomputers are making their presence known in the insurance industry.

According to the report Microcomputer Usage Trends in Insurance Companies put out by Newton-Evans Research, more than half of the 172 polled firms indicated they have one to five micros in their companies. Two respondents — about 1% of the survey base — said they had more than 2,000 installed micros.

Of all the companies polled, 11% indicated they expect to have more than 100 micros installed by the end of 1986. Only 1% indicated they do not have nor do they intend to have micros installed in that time frame.

Of note to laptop market watchers, the percentage of agents using portable computers is more than double the percentage using desktops.

The most common industry-specific application mentioned in the survey was generation of sales proposals and rate quotations. Forty-seven percent of the respondents used their micros for this purpose. This was followed by actuarial analysis (30%), agency marketing (29%), policy inquiries, claims statistics and accounting (20%).

## VDTs Harmless

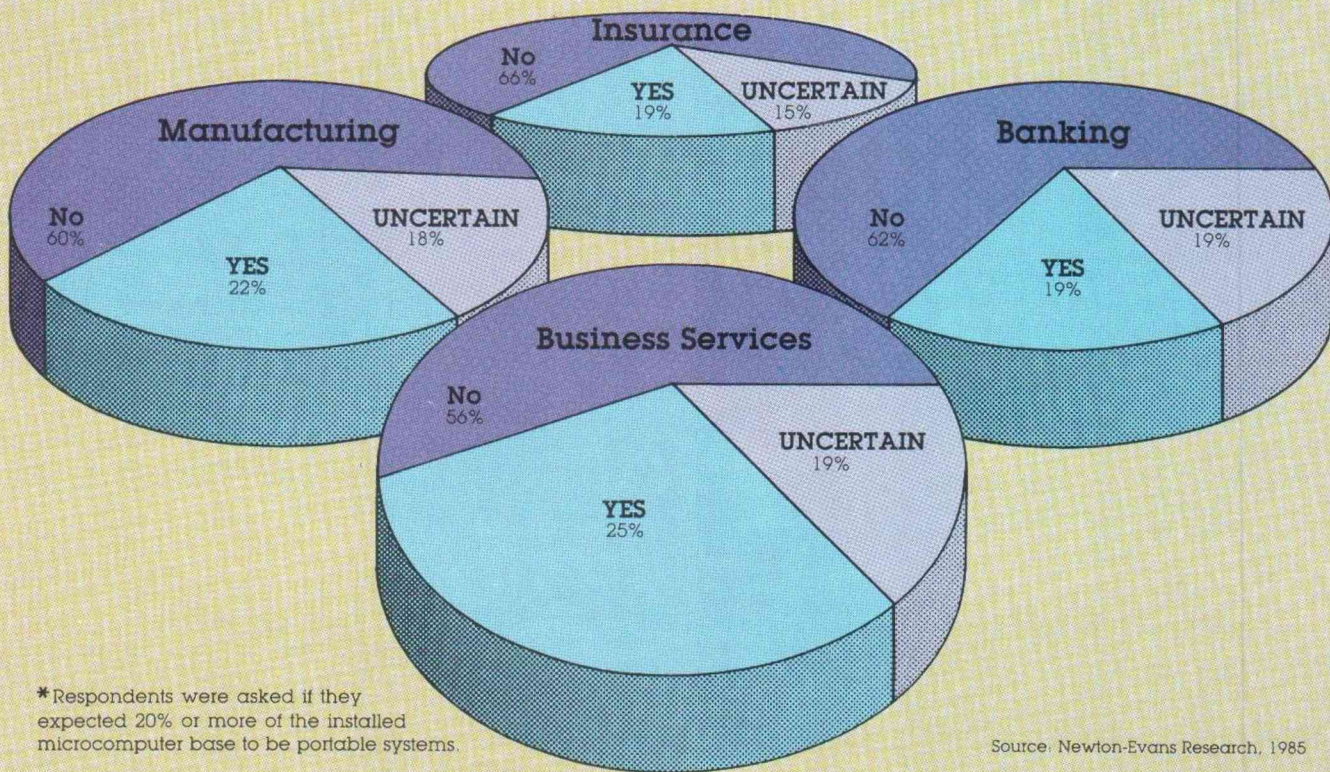
**T**here's no conclusive evidence to support claims of radiation or other serious health problems directly related to video display terminal (VDT) use, according to the Data Processing Management Association (DPMA).

In a formal position statement, DPMA said it, "believes legislation restricting the use of VDTs or limiting exposure to them is premature and

counterproductive. No scientific study has conclusively proved that 1) radiation emission from VDTs is beyond existing national or international standards; 2) that VDTs in the workplace represent more of a health or safety hazard than any other office machine or office product; and 3) that VDTs cause or contribute to stress-related problems."

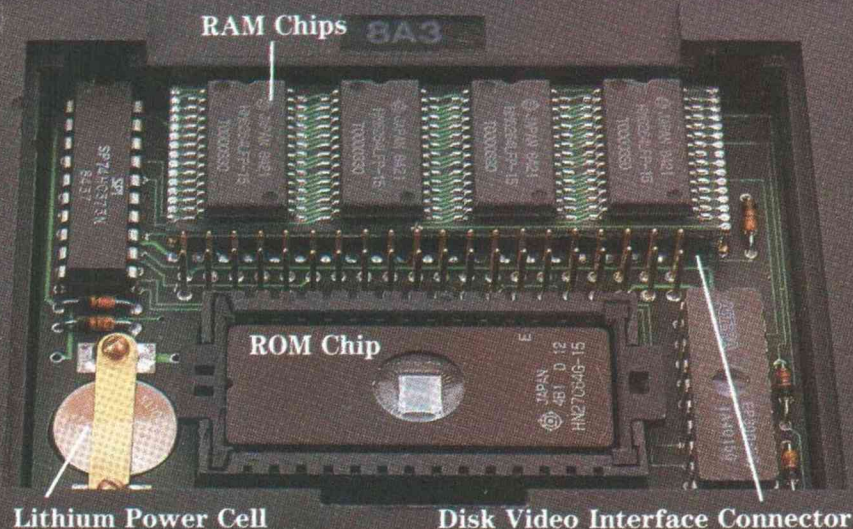
VDTs have been under attack recently as being responsible for a variety of ailments. DPMA feels most health problems are due to such factors as ambient lighting, poor seating, bad posture and improper furniture. "DPMA realizes that ergonomics should be given higher priority when installing VDTs and other related items," says Dr. Madhu Trivedi, chairman of the task force that drafted the DPMA statement.

**Projected portable computer use in key market segments\***





# State of The Art RAM Technology

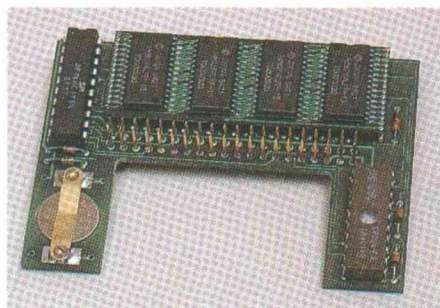


## At last, a 96K Model 100!

**"The new PG Design RAM should be in every Model 100 built!"**

### Miniaturized Technology

Our miniaturized RAM chips are state of the art. They are the most advanced memory chips found anywhere in the world. Their tiny size allows us to keep a low profile in the expansion port of the Model 100. We use a technique called *vapor phase soldering* to ensure that each and every tiny connection is clean — perfect.



*The RAM module is precision constructed.*

### Like The Original

Each 32K RAM bank has its own command of the software that comes in your Model 100. BASIC, TEXT, TEL-COM, ADDR55, SCHEDL are all there in each bank and you can use them as you would in the original bank. Each bank can be accessed from any of the other banks. We even have an optional data transfer program

which allows data to be transferred from one bank to any other bank. It's flawless!

### Simple Installation

"Adding this 64K RAM module to your Model 100 is as easy as putting in new batteries." Once you've removed the expansion cover on the back of your Model 100, just snap the **PG Design** RAM module in. You can't get it wrong! The pins line up perfectly with the expansion holes in the Model 100 compartment. Snap the cover back on and turn your Model 100 over. Turn it on and enter BASIC. Type in the one line program we supply you and presto—you've got a Model 100 with 96K of RAM. You do not need a 32K Model 100 to utilize the **PG Design** 64K RAM module.

### No Need To Remove It

The beauty of this RAM module is that we've enabled you to have a Model 100 with 96K of RAM and we've given you access to the other Model 100 options within the expansion compartment. The DVI connection can be made easily with our rugged connectors. Gone are the flat flimsy pins. And best of all, the ROM slot is clear to insert any ROM modules, (like Tandy's Multiplan on ROM). We designed this RAM module so it wouldn't ever have to be removed from your Model 100. But, if you should remove it, we've installed a lithium

power cell that will keep all the data on the module intact for six months outside the Model 100. Six months! The actual life span of the lithium power cell while in the Model 100 is nearly six years!

### Guarantee

We stand behind all the products we manufacture at **PG Design**. If you are not completely satisfied with your purchase, call us! If we cannot solve your problem, return the product to us and we will refund your money. We are positive that you will be completely satisfied with all our products.

### Order Today

64K RAM module — \$375

32K RAM module — \$250

If you want only a 32K version of the RAM module, you may upgrade later for only \$150. The 32K version is constructed exactly as the 64K module.

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available for the Model 100 — guaranteed.  
Try it for 30 days. If you aren't blown away by the  
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# \$199<sup>95</sup>

The four best programs for the Model 100 all on one ROM. 32K of power without using any RAM for program storage. This is the PCSG Snap-In ROM that just presses easily into the little ROM socket in the compartment on the back. You access the four right from the main menu like built-ins.

**Write ROM** — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit ... sur-

passed our highest expectations for quality and clarity."

**Lucid Spreadsheet:** This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

**Database:** This is a relational data base like no other. You can do everything from mailing lists to invoices. No complicated pseudo-coding, you create input screens as simply as typing into TEXT. You are not limited by size; you can have as large an input screen as you wish. Prints out reports or forms, getting information from as many files as

you like. Complete math between fields. Total interface with Lucid worksheets.

**Outliner:** Does everything that Think-tank does on a PC but a whole lot better. Includes a Sort for your headlines. Lets you have headlines of up to 240 characters. Has cloning, hoisting and sideways scroll up to 250 characters. Like Lucid, this one sets a new standard for outliners. This is the way to plan and organize your projects.

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As usual PCSG sells the Super ROM on a thirty day guarantee. If for any reason you are not satisfied, simply return it for a full refund.

We are excited about this product. Super ROM gives the Model 100 the true power of a desktop. No other multi-program ROM has software that compares. But don't take our word for it. We invite you to make that comparison yourself. Priced at \$199.95 on Snap-In ROM.

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